



# THE MINING CONGRESS JOURNAL

VOLUME 8

NUMBER 12

## *There Is No Right To Strike*



*STRIKE is a concerted and simultaneous withdrawal from employment of employes for the purpose of impressing some demand upon their common employer, in accordance with a previous determination either by those who strike or by their representatives.*

*Industrial disputes paralyze a nation's industry, waste millions of dollars and frequently endanger the lives and health of the people by cutting off the supply of food and fuel from large centers of population to which the flow must be continuous if suffering is to be avoided.*

*A strike which interferes with the production and distribution of the necessities of life is a conspiracy and all such controversies should be made subjects of judicial determination.*

# BYERS PIPE

GENUINE WROUGHT IRON



## It Cost \$71.45 to Replace this Piece of Pipe—

"Its original cost was probably six or seven dollars," said an engineer. "Byers pipe would have cost a couple of dollars more. I took no chances on using cheaper pipe this time."

Whether you invest fifty dollars or fifty thousand dollars in a pipe installation, the penalty of pipe failures is proportionately the same, and the ultimate saving effected by using Byers rust-resisting pipe is proportionately as great.

No one can foretell the durability of any metal except by a knowledge of its past performance. Change the metal in the slightest degree, and all calculations

as to its life may be upset. This is the reason why Byers pipe is still being made as it was fifty years ago—of genuine old-fashion wrought iron—the only ferrous pipe metal which can support its claim for durability by past performance of the most convincing character.

Byers Bulletin No. 39, "Installation Cost of Pipe," contains cost analyses of a variety of plumbing, heating, power and industrial pipe systems, with notes on corrosive effects in different kinds of service. Send for a copy.

**A. M. BYERS CO : PITTSBURGH : PA**

Established 1861

New York Philadelphia Boston Cleveland Chicago  
Tulsa Houston Los Angeles

*Look for the Name and Year rolled in every length*

*"The Waugh Way Wins"*



## *Upsetting Steel and Tradition*

**T**HE rapidity with which Waugh Model 8 Drill Sharpener forms perfect drill bits and shanks and its extreme economy of air consumption, upset all drill sharpening traditions.

WHEN you have actually operated one of these remarkable machines, you will realize that no mine blacksmith shop can afford not to be Waugh-equipped.

FASTER work, better bits and shanks, and marked improvement in underground efficiency and morale—all these things are easily achieved by the installation of Model 8. May we send you a copy of our Drill Sharpener bulletin? Just ask the nearest Waugh branch office for one today.

**THE Denver Rock Drill Manufacturing Co.**

*Denver, Colorado*

**Rock Drills, Drill Steel Sharpeners and Hole Punchers, Portable Hoists**

San Francisco  
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Toronto

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**The Denver Rock Drill & Machinery Company, Ltd.**

**Sole Agents in South Africa**

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Johannesburg, Transvaal, South Africa



## Aero Brand Cyanide

In every mining country in the world Aero Brand Cyanide is being used for the extraction of gold and silver ores.

The consumption of Aero Brand for this purpose exceeds that of all other cyanides combined.

A record of this kind, achieved in less than six years, must rest upon fundamental realities.

Aero Brand Cyanide does the work that it is intended to do, efficiently and at the lowest cost.

---

**AMERICAN CYANAMID COMPANY**  
511 FIFTH AVENUE                      NEW YORK CITY



# THE MINING CONGRESS JOURNAL

DECEMBER, 1922

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Entered as Second Class Matter January 30, 1915, at the Postoffice at Washington, D. C.

# The Roessler & Hasslacher Chemical Company



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*Works:*

PERTH AMBOY, N. J.

NIAGARA FALLS, N. Y.

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## Cyanide of Sodium 96-98%

Cyanogen contents 51-52%

### "Cyanegg"

or Cyanide of Sodium 96-98% In egg form, each egg  
weighing approximately one ounce

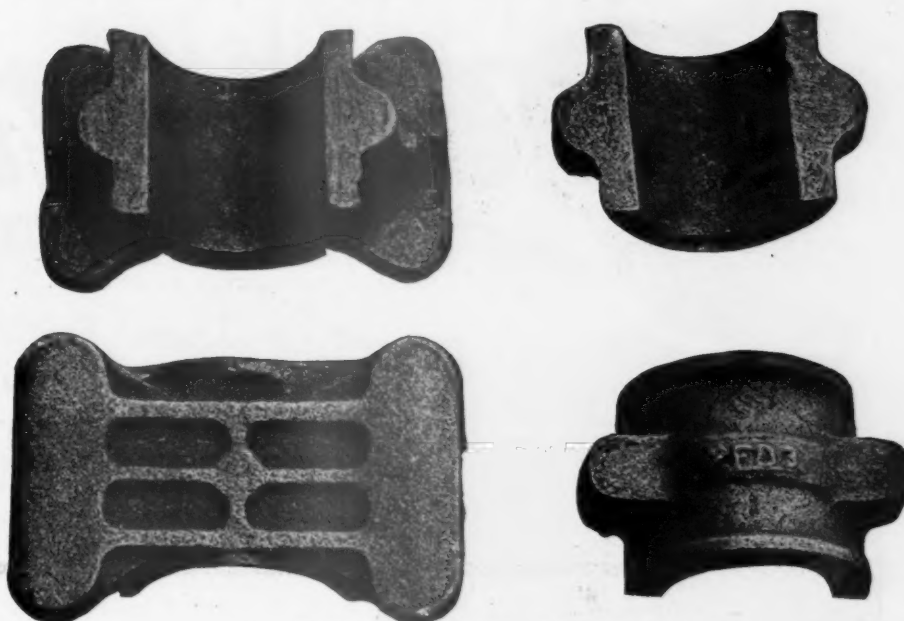
SIVYER  CASTINGS  
DEPENDABLE

The Sivyer Service of providing Electric Steel Castings has for its objects the decrease of machining costs and the increase of wearing-quality and life. Both are attained by methods which result from long experience and begin with the design of the casting itself, in order to make it a really practicable casting job without affecting in anyway its function and efficiency.

**Secondly:** Sivyer Service analyzes the functions of the casting and specifies the proper composition steel for the job; long experience with carbon and alloy steels has enabled us to reduce costs and increase quality remarkably for many different industries.

**Thirdly:** Sivyer Service makes a careful study of the pattern and moulding problems involved, for improper gating and insufficient risers are often the greatest wasters of metal and machining labor.

**Fourthly:** Sivyer Service analyzes carefully the proper annealing methods to be used and controls their proper application through unfailingly efficient equipment and men. In short, the Sivyer Service supervises every step necessary to secure unfailingly good castings of electric steel. From casting-design to sand-blasting and tumbling, the fundamental superiority of Sivyer Steel is due to its men and metal. Their value is best proved by the fact that, although the production of steel castings is generally looked upon as a local one, the Sivyer market is national.



*Truck spring-seats and caps of Sivyer Steel.*

## Made Continuously Since 1919

**I**N 1919 a truck manufacturer, who had kept complete service records on all his trucks for eight years, decided that his spring seats and caps would have to be better than iron could make them. To make these parts really break-proof for the entire lifetime of his truck required steel. Nearby steel foundries, however, did not produce castings satisfactory to the manufacturing departments. When Sivyer was finally asked to make them, it was found that a change in moulding practice did away with the cause of former machining difficulties. The Sivyer castings were uniformly true, sound and clean and had the exceptional toughness that unfailing control of metal and proper annealing provide. For the past three years there has been an uninterrupted production of these spring seats and caps in Sivyer Steel—for even in 1921 the merit of this manufacturer's thoroughly built truck made possible a sales volume exceptional for the industry.

# SIVYER STEEL

SIVYER STEEL CASTING COMPANY, MILWAUKEE



# Deming

HAND AND POWER PUMPS FOR ALL USES

## Users' Testimony Proves that Deming Pumps "Cut Cost per Ton"

**W**E were among the very first to introduce portable and electric-driven pumps into coal and metal mines. Today thousands of Deming Pumps are in service in the mining fields of the United States. The few users' reports quoted here were selected from an impressive stack of like testimonials. They show *why* Deming Pumps have *earned* this predominance.

"...in use 11 years, the small amount of expense shows conclusively the high state of efficiency of Deming Pumps".

Walnut Hill Mines

"...have pumped gritty and dirty mine water continuously for 2 years without one cent for repair parts".

Leona Mines

"...in constant use for 5 years — repairs have been almost nothing".

New River Mines

"...in use over 5 years, and our pump tender wonders at the lasting quality of Deming Pumps".

LaColle Mines

"...do not cost a penny for repairs, the only upkeep expense being the packing".

Winifrede Mines

"...fully convinced they are the "best pumps in the world".

Black Hawk Mines

"...we doubt if there is another pump of this style that would stand up under the hard service as long as this pump has".

Borderland Mines

**THE DEMING CO.,** Est. 1880 **SALEM, O.**

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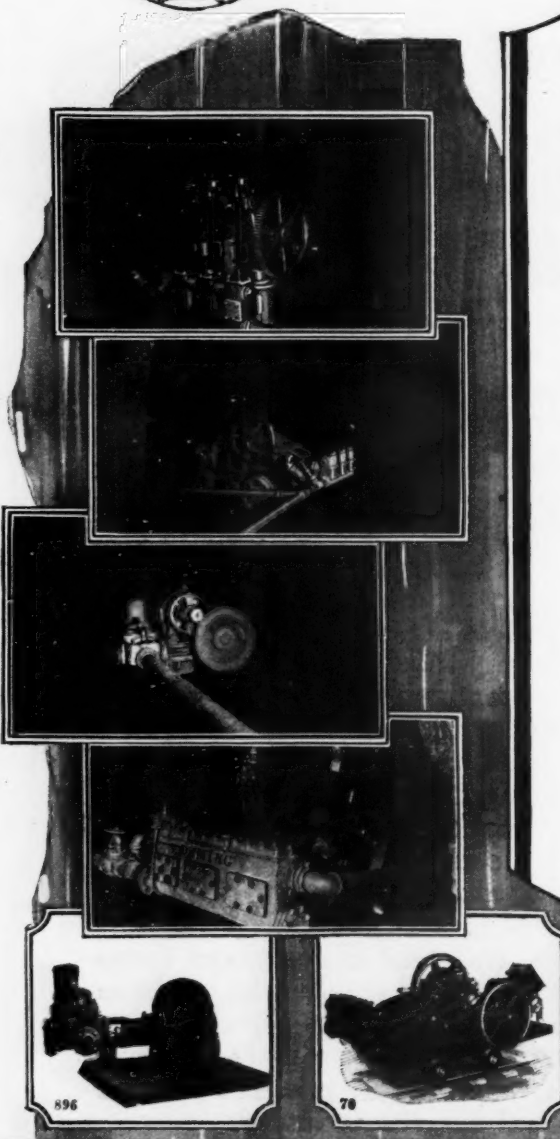
Chicago, Henion & Hubbel

Charleston, Charleston Elec. Supply Co.

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New York, R. B. Carter Co.



# PUMPS





CHARLES E. GOLDEN  
President and General Manager

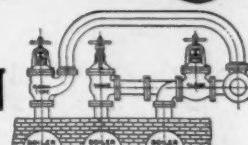
# ENGINEERS Think This Over

Mr. Golden says: "Don't be content with Pop Safety Valves. In the event of a ruptured boiler tube or steam pipe they are useless to control the rush of steam from all your boilers through the break. Think of the chance you take in not preventing this possibility."

The big iron and steel plants, realizing the importance of protection against this danger of shutdown and disaster, have installed.



## 4100 GOLDEN-ANDERSON Life and Property Insurance Valves

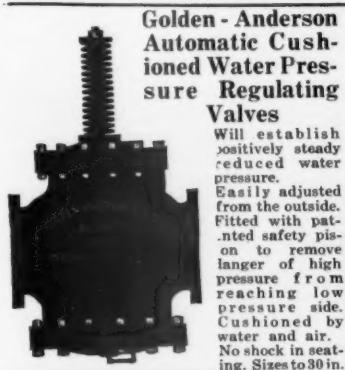


"Every Valve with a Positive Guarantee"

"Hosts of References"

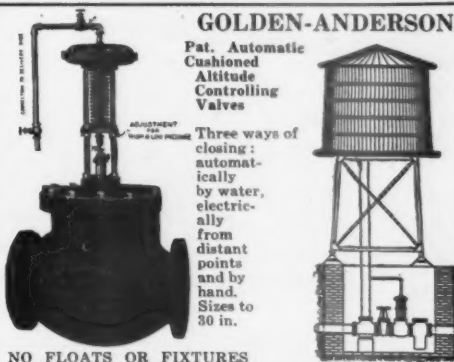
"Double Extra Heavy Valves"

### "No Shut-Down When a Tube Bursts"



**Golden-Anderson  
Automatic Cushioned  
Water Pressure  
Regulating  
Valves**

Will establish positively steady reduced water pressure. Easily adjusted from the outside. Fitted with patented safety piston to remove danger of high pressure from reaching low pressure side. Cushioned by water and air. No shock in seating. Sizes to 30 in.



**GOLDEN-ANDERSON  
Pat. Automatic  
Cushioned  
Altitude  
Controlling  
Valves**

Three ways of closing: automatically by water, electrically from distant points and by hand. Sizes to 30 in.

NO FLOATS OR FIXTURES

**GOLDEN-ANDERSON  
Patented Automatic Cushioned  
Float Valves**

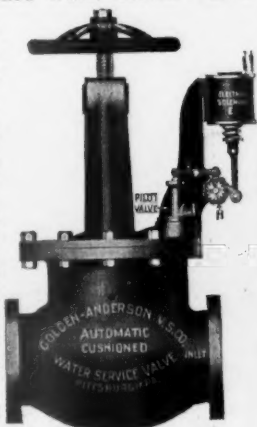
Will positively keep water-level between two fixed heights. Cushioned against shock. Fitted with swiveling float arm. Angle or Globe up to 30 in.



Angle or Globe up to 30 in.

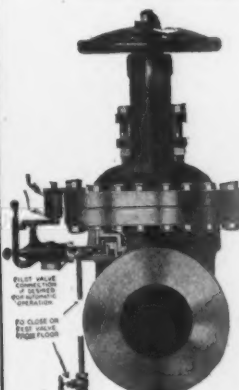
**GOLDEN-ANDERSON  
Patent Cushioned Water Service Valves**

1. These valves are especially designed for fire protection to quickly build up full water pressure.
2. Can be opened and closed instantly from distant points by electricity.
3. Current is on only a few seconds thereby preventing waste.
4. Can be fitted with either d. c. or a. c. solenoid.
5. Perfectly cushioned by water and air. Positively no metal-to-metal seating.
6. Can be closed by hand.



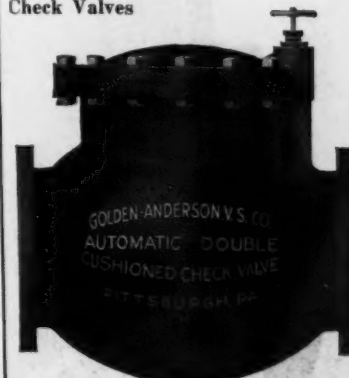
**GOLDEN-ANDERSON**

Pat. Cushioned Combine Throttle  
and Automatic Engine Stop Valves

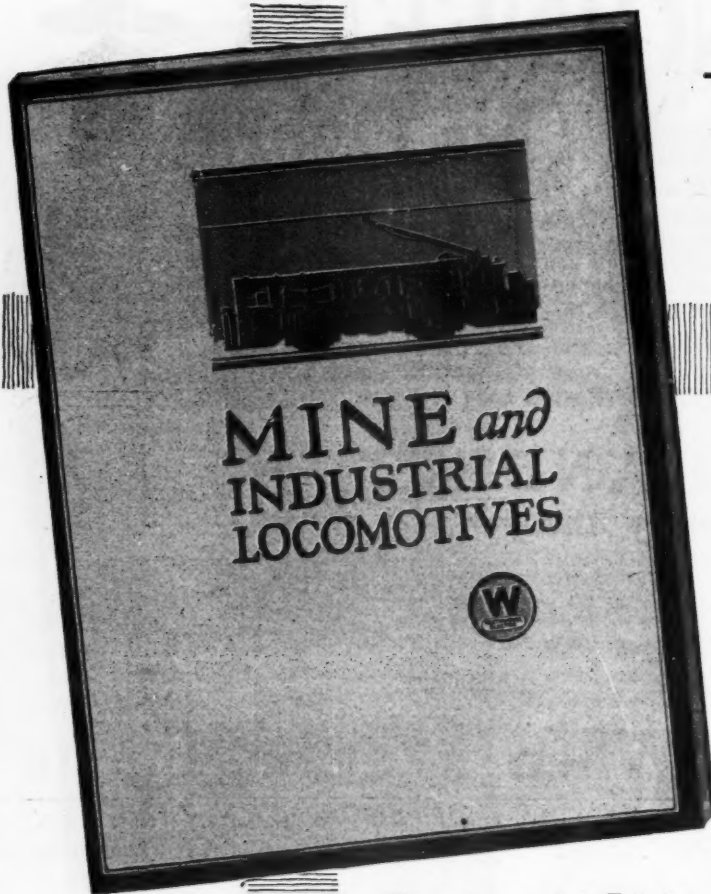


- 1—Can be operated by electricity from distant points, insuring instant checking of steam to run-away engine, or any part of the entire plant piping system.
- 2—Equipped with double Corliss Dash Pots. No chattering, pounding or sticking is possible.
- 3—Double extra heavy construction; occupy minimum head room.
- 4—Sizes up to 20 inches.

**GOLDEN-ANDERSON  
Patent Automatic  
Double Cushioned  
Check Valves**



**Golden-Anderson Valve Specialty Co., 1304 Fulton Bldg., Pittsburgh, Pa.**



—for the man who  
wants to know—  
Circular 1648

*This circular was prepared for the man who wants to know exactly what he buys. We welcome this class of buyer, because the Baldwin-Westinghouse Barsteel Locomotive has a real story of merit behind it.*

*Baldwin-Westinghouse Barsteel Trolley and Storage Battery Locomotives are built in many sizes for every mining service.*

*The story of its design, construction and use is told in Circular 1648, which will gladly be mailed upon request.*

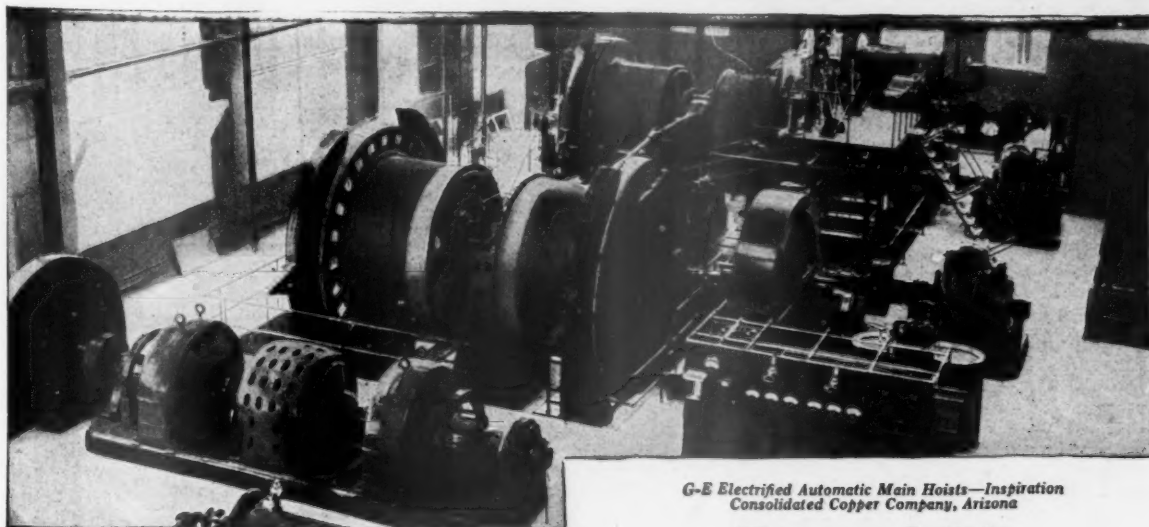
The Baldwin Locomotive Works  
Philadelphia, Pa.

Westinghouse Electric & Manufacturing Company  
East Pittsburgh, Pa.



Metal Mine  
Electrification

# Electric Hoists



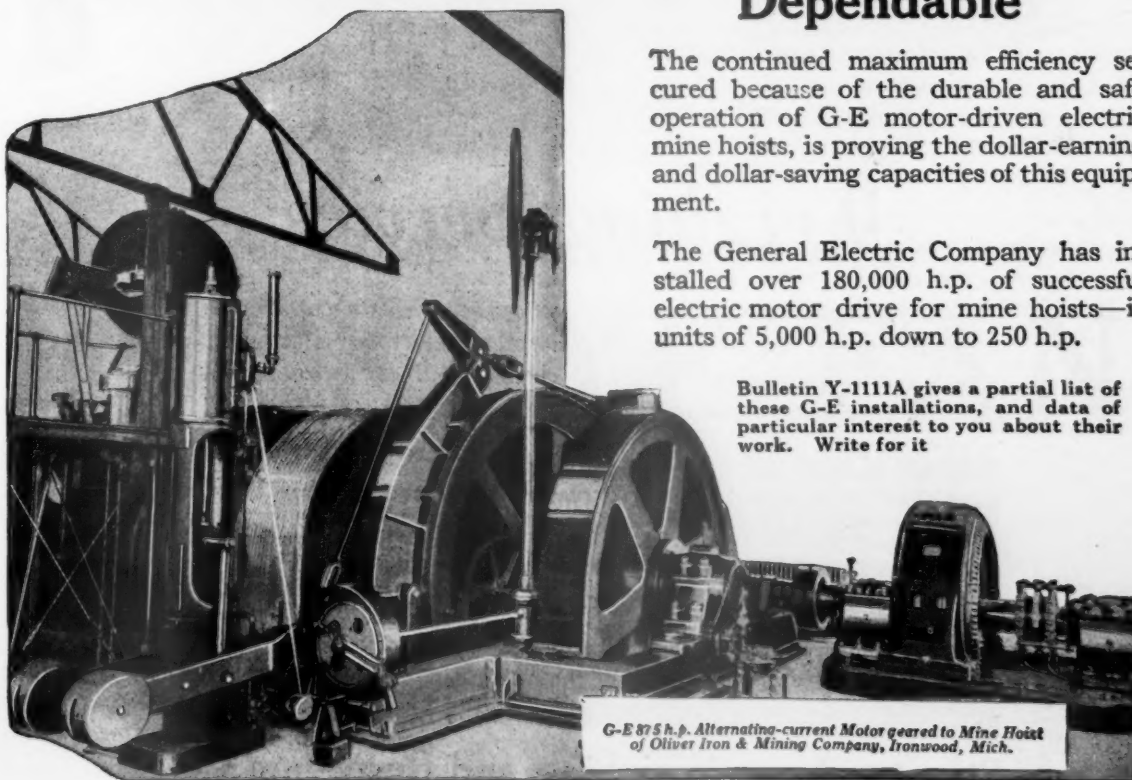
G-E Electrified Automatic Main Hoists—Inspiration  
Consolidated Copper Company, Arizona

## Dependable

The continued maximum efficiency secured because of the durable and safe operation of G-E motor-driven electric mine hoists, is proving the dollar-earning and dollar-saving capacities of this equipment.

The General Electric Company has installed over 180,000 h.p. of successful electric motor drive for mine hoists—in units of 5,000 h.p. down to 250 h.p.

Bulletin Y-1111A gives a partial list of these G-E installations, and data of particular interest to you about their work. Write for it



G-E 875 h.p. Alternating-current Motor geared to Mine Hoist  
of Oliver Iron & Mining Company, Ironwood, Mich.

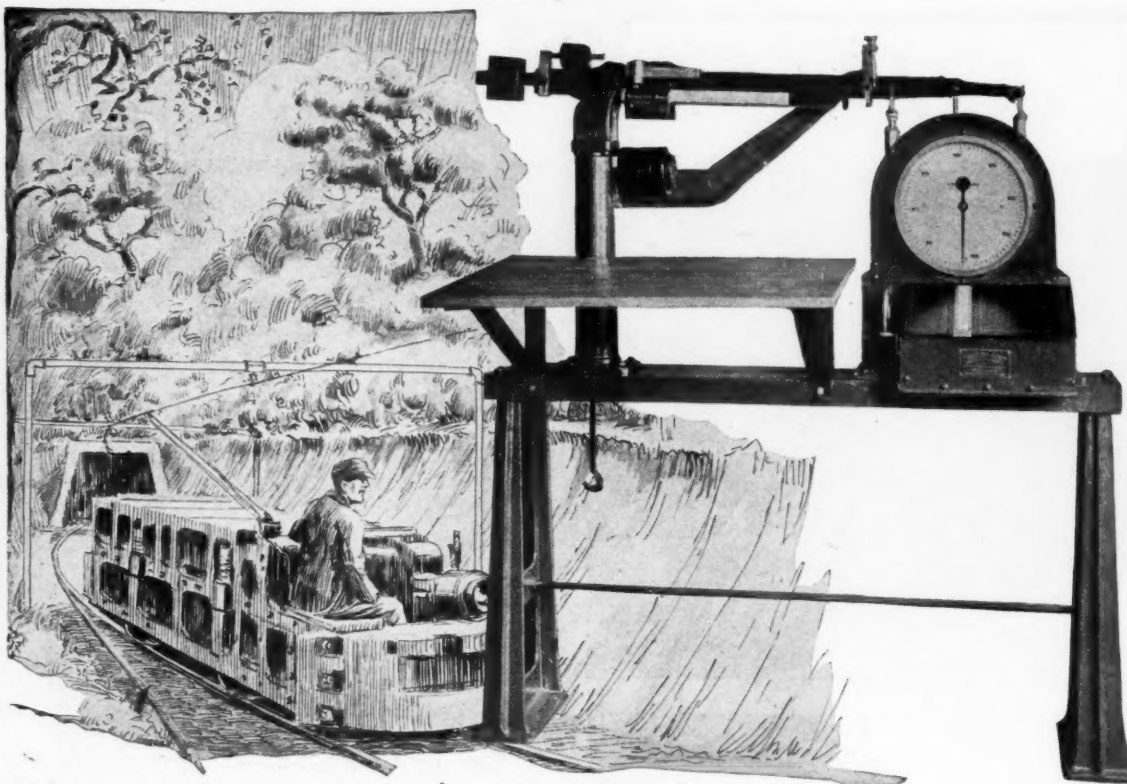
**General Electric Company**

General Office  
Schenectady, N.Y.

Sales Offices in  
all large cities

43B-7002





## *Weighing Service*

Accuracy, definite records, knowledge instead of guesswork are details of weighing service that every operator hopes to get from his scale equipment. But with the human element which enters into most weighing, these desirable results are often hard to attain.

Hundreds of large coal companies have put their weighing on the basis of knowledge and accuracy by using Streeter-Amet Weighing and Recording Machines. The element of human fallibility never interferes with accuracy. Cars cannot come too fast, and the machine never delays production by tying up cars at the scales.

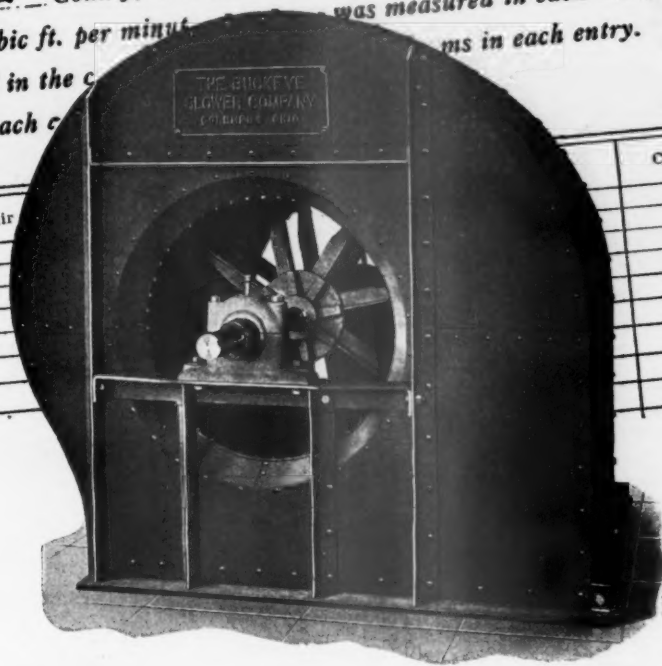
Economy and accuracy are only two of the details of value in Streeter-Amet equipment. May we point out the others?

**Streeter-Amet Weighing and Recording Co.**

4101-4105 Ravenswood Ave., Chicago



DUPLICATE  
REPORT OF MINE INSPECTION  
Inspector inspected the Four Mile

[illegible]

*A Clean Inspection Report Always for*  
**BUCKEYE FANS**

**Buckeye Fans put the mine on a safety basis and increase the output per man owing to an abundant supply of fresh air. After firing, Buckeye enables the men to go back to their work quickly as it clears out the smoke with a very little waste of time. Put a Buckeye on the job and keep your mine free from danger of gases, and at the same time have the best possible working conditions for your men.**

## Buckeye Blower Co.

## COLUMBUS, OHIO

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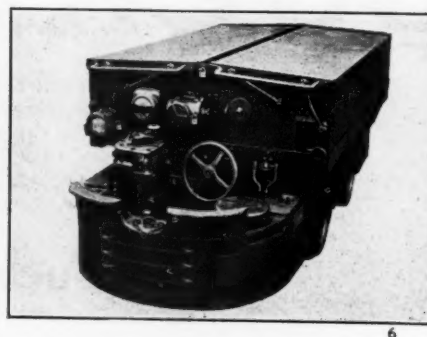
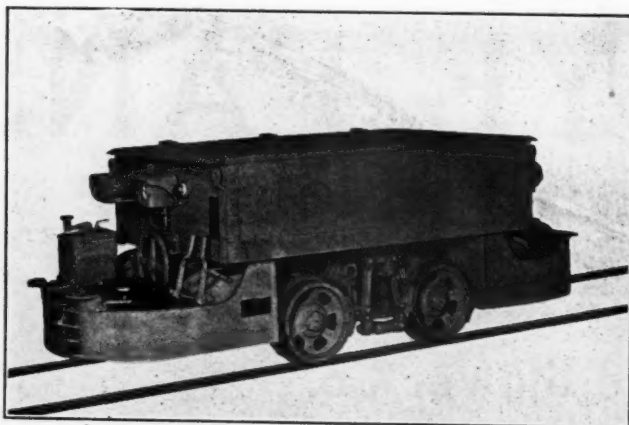
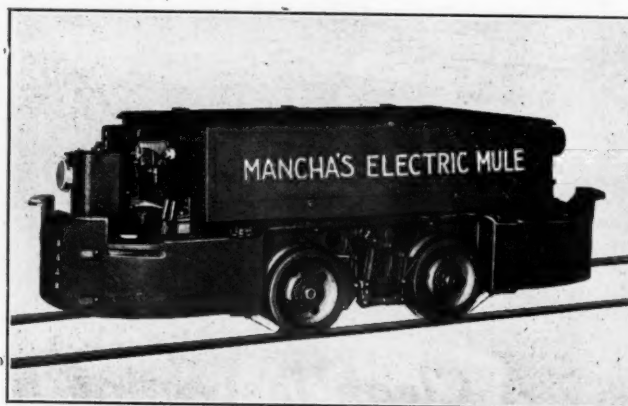
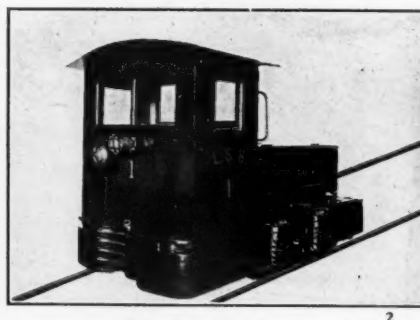
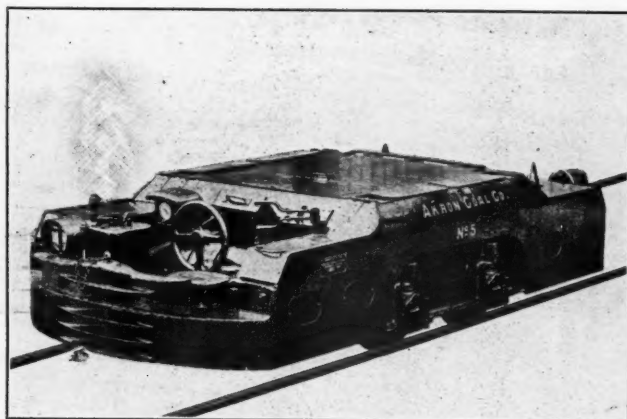
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Knoxville, Tenn.

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188 North Clark Street,  
Chicago, Ill.  
324 Monadnock Block,  
Chicago, Ill.

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Atlanta, Ga.  
17 East Rich Street,  
Columbus, Ohio

# Mancha's Electric Mule



## Mancha Storage Battery Locomotive Co.

ST. LOUIS, MO.

*Representatives In All Principal Cities*



## A Drill for Every Duty

THE Ingersoll-Rand Company manufactures a very wide variety of rock drills from the little 21½-lb. BAR-33 "Jack-hammer" for light work around industrial plants to the large 1250-lb. K-64 Submarine Drill—and everything in between. Each of the many machines is designed for a specific duty and the entire range of drills covers every phase and type of rock drilling.

I-R engineers are always ready to consult with you on your particular rock-drilling problems and suggest the type and size of machine that will do your work most efficiently.

It will pay you to get the right drill for your job and to remember that drill makes a drill for every job.

*Request descriptive bulletins*

# Ingersoll-Rand

11 Broadway, New York  
Offices the World Over

5-RDM

During the Exposition just closed at Cleveland, Ohio, we received names of over 200 operators interested in "OUR" products.

That speaks well for machinery of proven merits.

---

**ROBT. HOLMES & BROS., Inc.**  
DANVILLE, ILL.

BUILDERS OF COAL MINE MACHINERY, HOISTING  
AND TIPPLE EQUIPMENT

# New York Engineering Company

SPECIALISTS IN

## *Gold and Tin Placer Engineering and Equipment*

"EMPIRE"  
Gold and Tin Dredges

"EMPIRE"  
Prospecting Drills



PLACER  
Mining Equipment

SLUICES, RIFFLES, PIPE  
LINES, GIANTS

*Our factory, located at tidewater at Yonkers, N. Y., is most favorably located for export shipments by water as well as for domestic shipments via New York Central lines, and is within easy access of the raw materials markets. Our manufacturing facilities, coupled with our experience in placer fields the world over, enables us to render a service that is a guarantee of satisfaction*

WRITE FOR THE CATALOGS

Office  
2 Rector St.  
New York

**NEW YORK ENGINEERING COMPANY**

Works  
Yonkers,  
N. Y.





*Universal Shortwall on a Running Cut in a Wide Room*

## ***For Lower Costs—*** **THE UNIVERSAL CONTROL SHORTWALL**

The performance of the Universal Control Shortwall has brought out many notable things about this new coal cutter. One thing is its low maintenance cost.

Analyzing the Universal Control you are quick to discover the reason. It is evident that everything which the earlier Goodman Shortwalls did may be done by the Universal Control!—and done more easily, smoothly and quickly.

Power on both rope drums has increased its flexibility and has added speed.

What is more, the variable speed control, which automatically regulates the high and low speeds of both rope drums, assures smoothness and exact adaptability to conditions.

The combination of speed and smoothness in cutting enables the Universal Control to do increased work with less effort—and that means reduced maintenance costs.

*Write for this:*



*If you are looking for ways to reduce your operating costs write for our new 56-page book. It will be sent free.*

*"Send Book 222-M"*

# **GOODMAN MANUFACTURING COMPANY**

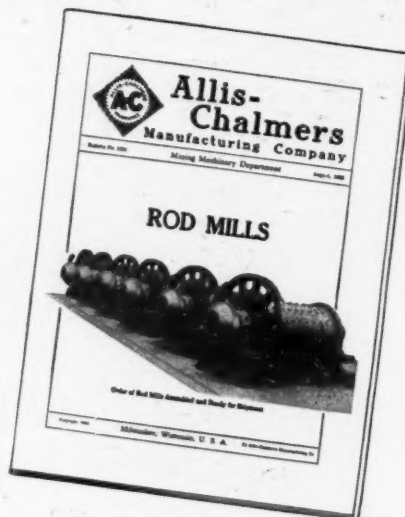
**CHICAGO, ILL.**

CHARLESTON W. VA. SEATTLE

## Now Ready for Distribution

### ROD MILL

Bulletin 1821



*This new publication contains capacity tables, clearance sketches and other information regarding*

### ROD MILLS

*Send for Copy*



**ALLIS-CHALMERS**  
MANUFACTURING COMPANY

MILWAUKEE, WISCONSIN. U.S.A.

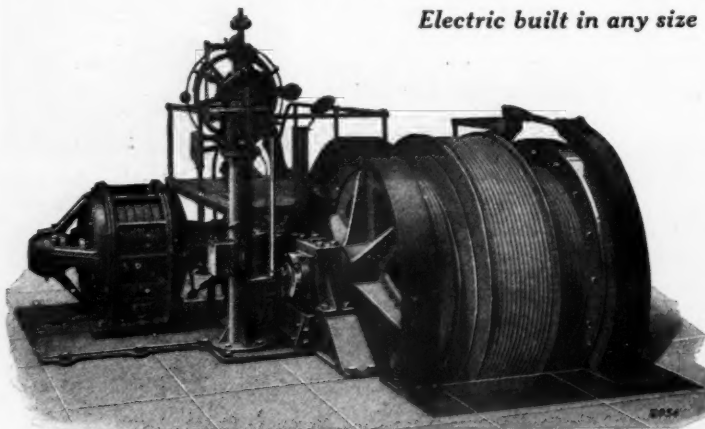


# LIDGERWOOD

## MINE HOISTS

*Electric built in any size*

*Steam up to 1,000 H.P.*



DOUBLE CYLINDRO-CONICAL DRUM

We build mine hoists in types and sizes to meet every requirement of mine service.

**ECONOMY IS THE KEYNOTE OF THE CONSTRUCTION OF LIDGERWOOD HOISTS.**

The design, material and workmanship are the best obtainable.

The result is a smooth running, well-balanced hoist, with internal friction reduced to a minimum, giving the greatest rope pull for the power expended.

**THIS IS TRUE ECONOMY**

**Lidgerwood Mfg. Co., 96 Liberty St., New York**

Philadelphia Pittsburgh Chicago Cleveland Detroit Los Angeles Seattle London, England



## The Pyramids of Gizeh

Herodotus records that 100,000 workmen toiled for a generation to build the great Pyramids of Gizeh, tombs for Egypt's kings.

Cubes of stone as large as ten feet were quarried by driving wooden wedges into grooves in the rock and then soaking them with water. The swelling of the wedges cracked the stone which was transported to the Nile over mountains and valleys on water-bound, rock roads similar to macadam roads.

Explosives have replaced slave labor and have made possible the economical production of ore, coal, and rock products required by modern civilization. But in choosing the most economical explosive for each job there still remains an opportunity to prevent waste.

There is no explosive that is universally the most economical, but Hercules Special No. 1 often reduces blasting costs. We have recommended it for several years because it contains about 35 percent more cartridges per box than 40% extra dynamite, which it frequently replaces cartridge for cartridge, thereby reducing blasting costs approximately 25 percent.

Hercules Special No. 1 contains nothing but the highest grade of standard materials. Its wide use for years is proof of its economy and dependability. We will gladly tell you whether it is suited for your work.

Our new book, "Eliminating Waste in Blasting", was written to help you reduce blasting costs. Write to our Advertising Department, 934 King Street, Wilmington, Delaware, for a free copy.

# HERCULES

---

## POWDER COMPANY

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Birmingham, Ala.  
Buffalo, N. Y.  
Chattanooga, Tenn.

Chicago, Ill.  
Denver, Colo.  
Duluth, Minn.

Hazleton, Pa.  
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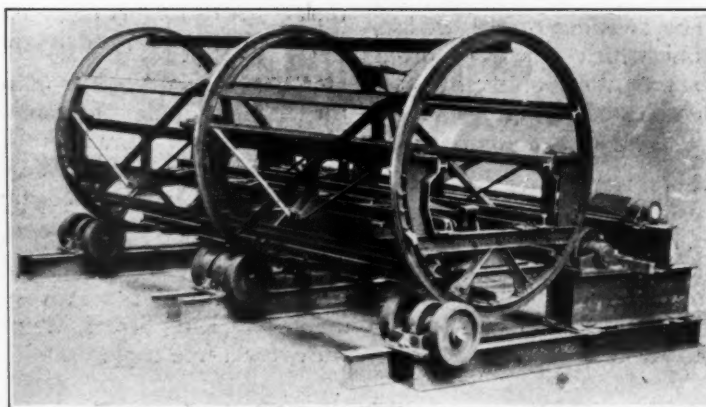
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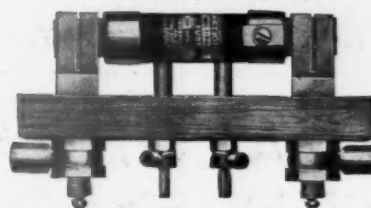
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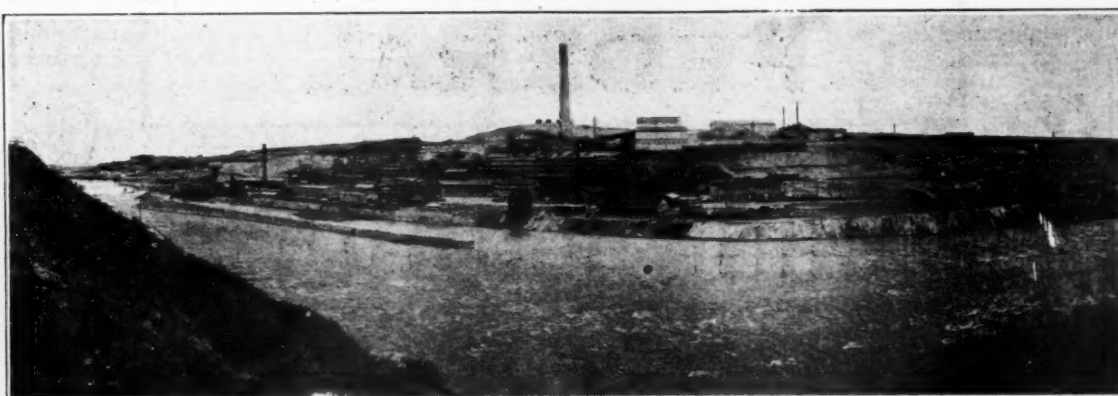
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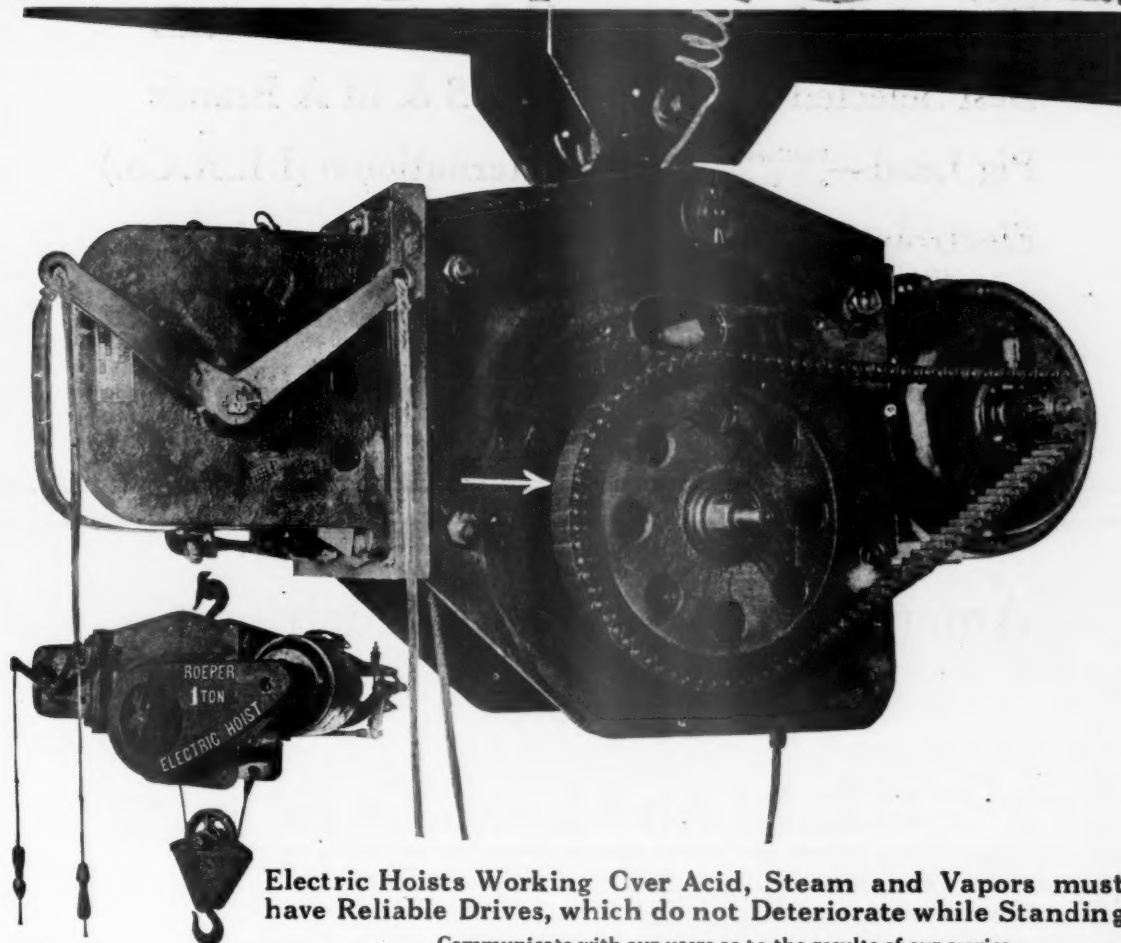
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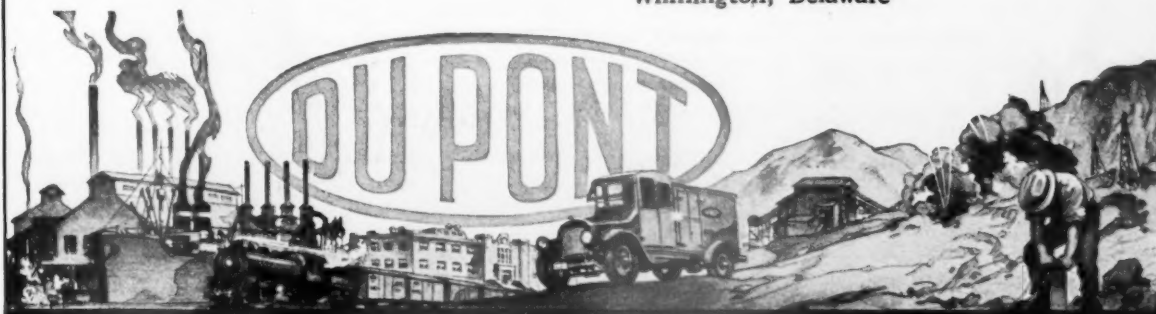
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## JUDICIAL DETERMINATION OF INDUSTRIAL DISPUTES

**I**NDUSTRIAL strife and industrial prosperity do not go hand-in-hand. A country is most prosperous when its industrial machinery is in continuous operation.

Continuous large production means lower cost, lower prices and greater consumption. The lower the price of commodities, the greater the purchasing value of the wages which are paid for production. Every interruption to the productive machinery of a nation adds to the cost of commodities and reduces the actual value of wages paid.

Waste of industrial power whether caused by strikes and lock-outs or by industrial stagnation is equally a burden upon the wage-earner. Business stagnation usually comes from causes which are remote and hard to remedy. Prices so high that the market is unable to absorb the product and foreign competition able to control our markets are among the chief causes of business stagnation.

Labor disputes usually grow out of a desire on the part of wage-earners to secure better working conditions or to increase wages. These purposes are laudable, should not be discouraged, and should in every way be met in a fair spirit in accordance with the law of the land and acting under its control.

In the past, strikes have been the weapon in the hands of labor with which to force its demands. In every other field of controversy disputes which cannot be otherwise adjusted are necessarily submitted to courts for decision.

Labor disputes have been put in a class by themselves and the proposals of having these disputes settled by judicial methods have been opposed first by the employers when they believed they had the power to control and later by the labor unions when their power grew to the extent where they felt able to coerce the employers.

Industrial disputes paralyze a nation's industry, waste millions of dollars and frequently endanger the lives and health of the people by cutting off the supply of food and fuel from large centers of population to which the flow must be continuous if suffering is to be avoided.

Individuals who interfere with the public peace in attempts to settle their own controversies are thrown into jail because they disturb the public tranquillity, although their controversy is of but local interest and affects but a very few of the people.

The public interest in personal controversies is nothing like so great as it is in industrial disputes. Disputes between individuals over the title to property or the fulfillment of a contract affect only a small portion of a community, whereas industrial disputes which directly affect the prices of commodities are of much more

vital interest to the public than personal disputes which must go to the courts for decision.

MINING CONGRESS JOURNAL believes that both sides to these controversies have been wrong in that there would seem to be no disputes affecting public interest which should not be decided under the law of the land and by a judicial body.

## STOCK DIVIDENDS

**T**HAT STOCK dividends are declared by a corporation for the purpose of avoiding taxation of its surplus is an erroneous conception of the purpose of stock dividends and is founded upon reasoning that is groundless. Legitimate financial reasons justify the practice of issuing stock dividends—reasons which were recognized long before income and profits taxation became a part of the fiscal system of the federal government or was even contemplated as a means of raising the major revenues for the support of the government.

Business operations result in either a profit or a loss. A loss from the time of beginning the business results in the impairment of capital. Conversely, a profit from the beginning results in the creation of a surplus. A loss during any period of operations may wipe out a substantial surplus. Thus, it is good business management to allow a large surplus to accumulate during periods of prosperity in order to offset losses incurred during periods of depression, so that the original capital may be carried unimpaired by fluctuating conditions. The larger the business, and the more extensive its operations, the greater the surplus needed.

It is a difficult matter to determine what amount of surplus is needed to maintain a business on a sound basis, to provide for additional plants, improvements, betterments, working capital, sinking funds, and necessary corporate activities, and to anticipate years of lean earnings which draw heavily upon surplus, or years of prosperity which require an extension of the business. It is therefore a practical necessity which causes a wisely managed company to constantly reinvest a part of its earnings in the business whereby it ceases to be liquid and cannot be distributed as cash to the stockholders.

Technically, stockholders are entitled to receive all of the earnings as dividends; but sound business practice justifies the withholding of a portion of the earnings and the creation of a surplus. Seldom is the entire surplus held in the form of cash or its equivalent. Usually, it becomes a part of the fixed capital. Therefore, that part of the surplus which is added to the capitalization is no longer available for cash dividends.

Under these circumstances, a stock dividend distribution is distinctly advantageous to the company. It serves a fourfold purpose: (1) the capitalization will more nearly represent the actual net worth of the business; (2) the surplus is reduced, and, to the extent of the amount of the stock dividends, is made unavailable for



cash dividends; (3) the physical assets of the company, built up by use of surplus, can be kept intact; (4) the price of the stock may be materially lessened so that employees and the general public may invest and share in the prosperity of the company. Other reasons, of a similar legitimate character, might also be advanced.

Contrary to the assertions of uninformed persons and propagandists, the distribution of stock dividends cannot be ascribed to any intention of avoiding the tax on surplus accumulated beyond "reasonable needs of the business" provided for in the 1921 revenue law. Under the ruling of the Supreme Court, such a surplus, if found, undoubtedly would be taxable whether capitalized by a stock dividend or not. This misconception must be corrected, otherwise great injustice may result from burdensome, if not disastrous, taxation of surplus.

### ABOUT GOLD

**I**T MIGHT BE well for those economists who believe in the gold standard and yet who argue that the present trend toward higher prices is based upon "the realization that enough new gold is being added to the existing stock, not only to make possible a gradual return to a world gold standard, but also to tend to drive prices up again."

Mr. John Oakwood in *Forbes'* magazine goes on to say:

"This is one of the major explanations of why the World War is not being followed by a period of continued declining prices—the aftermath of all previous great conflicts. It is also one of the big shocks to unsound money advocates throughout the world, and particularly in Europe. Europe's shortage of monetary gold, as a result of her loss of huge volumes to the United States, gave the unsound money advocates there some powerful arguments and also gave the government finance managers some plausible excuses for all sorts of money misdeeds and heresies."

It seems to the MINING CONGRESS JOURNAL that the scarcity of gold in European countries has furnished the most conclusive evidence that without a suitable metallic base, no nation can hope to maintain its currency at par. The value of paper money throughout the nations of Europe are so nearly in proportion to the amount of gold held in reserve by each that it seems to afford a plausible argument, if not positive proof that public confidence in any currency practically ceases as soon as its metallic base has been withdrawn.

This being the case, it will be difficult to understand the indifference of many people to the importance of stimulating gold production. During the five years, 1911-1916, inclusive, the average production of world's gold was \$459,000,000. During the years from 1916 to 1920, inclusive, the average world production was \$391,000,000, a net deficit of approximately \$68,000,000 annually, or \$340,000,000 for the five-year period.

According to the Guaranty Trust Company of New York, "a gold dollar in the vault is the basis of ultimate credit of nineteen to thirty-five dollars. Each gold dollar thus withdrawn necessitates curtailment of credit to that extent." The shortage of gold production during the latter five-year period therefore "necessitates curtailment of credit" in an amount varying between six billion and eleven billion dollars. No one can estimate the value of six billion dollars well supported credit money in the channels of European trade. During these same years, when the gold production was decreasing, there has been an enormous increase in the use of gold for purposes other than monetary reserves. The higher the prices the greater the amount of money in circula-

tion, the larger has been the demand for jewelry in which gold furnishes a very major part.

During the period of the World War, according to the National City Bank of New York, the world's national debts alone increased from \$43,000,000,000 to nearly \$300,000,000,000 at the end of the year 1920.

With the enormous increase in world's indebtedness and the enormous increase in business transactions throughout the world, a necessity is created for a largely increased gold reserve which can only be met by a steady increase of production. Surely this need cannot be met by decreasing production, increasing the use of gold for other than monetary purposes, and the tying up in our own banks of a gold reserve in excess of that which is needed to support the currency system of the United States.

It will be well for the people of the United States to devote much attention to some plan by which our surplus gold may be made available in the stabilizing of European finances; to the decrease of gold taken from our reserve for other than monetary purposes and to the stimulation of our production of gold so that it may remain at least normal and thus make possible the stabilization of the continually increasing world credit and currencies.

### BOTH PROSECUTOR AND JUDGE

**T**HE REPORT that progress is being made by the income tax unit in the settlement of questions involved in the adjustment of tax returns for 1917 and subsequent years should be welcome news to taxpayers who have been holding business activities in abeyance pending the determination of their tax liabilities and their claims.

That many taxpayers have not fully understood what was required to substantiate the figures set up in their returns, and that they have erred, in many instances, in the selection of proper bases for their computations, is conceded. Such results could not possibly have been avoided in attempting to comply with new and complex laws which even the authors could not explain until practical experience established precedents and demonstrated what interpretations should be made to make them fairly workable.

Unquestionably, numerous cases lie dormant in the files of the Bureau of Internal Revenue in which taxpayers have made overpayments through ignorance of their rights under the law and unfamiliarity with the regulations and procedure of the department; and, as to these, the period of limitations may soon expire, although if they were properly analyzed, claims for credit or refund could be successfully prosecuted. Unintentional miscalculations, made in tax returns, have been in favor of the government probably in as many instances as they were in favor of taxpayers.

The income tax unit occupies, in effect, the positions of both prosecutor and judge, and therefore there should be no arbitrary juggling of figures or factors by government agents either for the purpose of swelling the amount of additional taxes to be assessed or for the purpose of defeating claims for refund or credit of overpayments, and taxpayers should receive every consideration consistent with public policy.

The huge task with which the income tax unit has been confronted has no parallel in the history of the country. This task has involved the training of a vast organization, and the building up of the various divisions of this organization to the point where the unit as a whole could



function effectively necessarily has been a slow process due in part to the frequent loss of key men who are called to private employment by the tempting remuneration offered.

In the completion of its task in connection of cases arising under the revenue laws of 1917 and 1918, the unit should carefully avoid the exercise of arbitrary judgment in the determination of controversies, even though some action may be necessary to protect the interests of the government against the running of the statute of limitations. No taxpayer should be compelled to pay a purely arbitrary assessment based upon a record that is incomplete because congestion in the unit has prevented earlier action on the case, and no case should be closed in favor of the government by the use of mathematical formulae which involve questionable assumptions. No final determination should be made which can not be justified by established rules of equity and law.

### WAGES AND THE GOLD STANDARD

IT WILL NOT be contended that the wages of the world can, or should, at all times be held to that level which will permit the operation of the average gold mine, but it is contended that there must be a general relation between the average wages paid throughout the world for similar service and the wages which are, or have been, paid in the production of the world's gold supply. It may be questioned whether at this time the world is on a gold standard, but it is insisted that that part of the world where credit currency can pass at anything like its face value is based upon the gold standard.

Theoretically the gold standard is based upon the average cost of gold through that period of years in which the largest part of the world's gold has been produced. Lincoln once said that no country could exist part slave and part free. To paraphrase this statement, it may be said that no country can remain normal commercially and industrially where wages in one part of the country are radically different from those paid in another part under similar conditions for substantially the same service. The situation now prevailing at Butte, Mont., illustrates this point. There is an immediate demand in the copper mines at Butte for approximately 3,500 men at gold standard wages. In the nearby coal producing districts of Wyoming are several hundred men out of employment the greater part of the time who cannot be induced to go to the Butte mines because of the artificially created high level of wages there prevailing in the coal mines. The same condition prevails throughout the nation as a whole. Coal mines of the east have approximately 200,000 men more than are needed to supply the nation's demand for coal. In the western states there is a demand for approximately 200,000 men at gold standard wages. The industrial progress of the west is being hampered because of this short supply of labor, while the industries of the nation are being charged the additional cost of coal necessary to furnish full time wages or at least a full time living to men who are only employed half the time or less.

A solution of this problem will go far toward a solution of the general problems which are now under consideration by the Fact-finding Coal Commission.

### THE RIGHT TO STRIKE

NO ONE will question the right of an individual to quit work, but many acts which are perfectly legitimate for the individual to do by himself become a conspiracy when done in combination with others. This is particularly true when these combined acts are for the purpose of intimidating or coercing others to their disadvantage. It is not a duty on the part of an individual employe, unless under contract, to remain at work simply because his failure to work will effect an injury to another, but the combined effort of a number of men to strike, which is intended to and which will necessarily, work an injury to another for the purpose of coercion or intimidation, is fundamentally a conspiracy.

*A strike is a concerted and simultaneous withdrawal from employment of employes for the purpose of impressing some demand upon their common employer, in accordance with a previous determination either by those who strike or by their representatives. There is no such thing as a right to strike.*

The United States Supreme Court has decided that "A combination which has as its object, or as one of its means, or which contemplates interference with or the interruption or obstruction of the United States mail, is a conspiracy." This rule is laid down as against a combination of railroad managers who undertake to bring about the discharge of employes and thereby prevent the operation of mail or interstate business.

If this principle is correct as applied to employers it should be equally correct in its application to any other form of conspiracy that interrupts interstate business. If this jurisdiction exists in the Federal Court upon the matters of interstate commerce, it is equally under the jurisdiction of State Courts as applied to intrastate business.

This principle is clearly outlined in a decision by the United States Circuit Court of Appeals, written by Mr. Justice Harlan, as follows:

"It is one thing for a single individual, or for several individuals each acting on his own responsibility and not in cooperation with others, to form the purpose of inflicting actual injury upon the property or rights of others. It is quite a different thing, in the eye of the law, for many persons to combine or conspire together with the intent, not simply of asserting their rights or of accomplishing lawful ends by peaceful methods, but of employing their united energies to injure others or the public. An intent upon the part of a single person to injure the rights of others or of the public is not in itself a wrong of which the law will take cognizance, unless some injurious act be done in execution of the unlawful intent. But a combination of two or more persons with such intent, and under circumstances which give them, when so combined, a power to do an injury they would not possess as individuals acting singly, has always been recognized in itself as wrongful and illegal."

THE MINING CONGRESS JOURNAL believes that every dispute which affects the public interests should be settled by a public tribunal and that all parties should be required to submit their disputes for judicial determination to some duly created body representing, in a broad impersonal way, the public interest.

THE MINING CONGRESS JOURNAL believes it is time that a proper distinction be made between the right to quit work and the alleged but non-existent right to strike.

### SILVER AND STABILIZATION

**P**ERHAPS there is no one question which more greatly affects the future of European finances and industry than the stabilization of the monetary systems of European countries. If it were possible to make available a supply of gold upon which to base an ample credit currency that would be the ideal solution. As it is, however, with the United States holding 40 percent of the total monetary stock of gold in the world, with the world's gold production falling below the pre-war production level, with the present upward tendencies of price levels adding to the already prohibitive production costs of gold standing as a bar to increase gold production throughout the world with the present world inflation and the necessity of large volumes of currency because of the higher prices and increasing volume of business, it seems apparent that many of the European countries now suffering industrial and financial stagnation cannot hope to acquire a sufficient stock of gold with which to stabilize and support adequate currency systems.

What then is the alternative? From time immemorial gold and silver have been regarded by the peoples of the world as best adapted for uses as money. The increased price of silver during the years 1919, 1920 and a part of 1921, during which time credit money was permitted to circulate without much regard to its metallic backing, a number of European countries found it advisable to dispose of their stock of silver coin as a temporary expedient to meet existing emergencies, which left these countries largely without any metallic money at the close of the war.

These countries are finding it very difficult to do business with a very greatly depreciated paper currency, but lack the means to secure a supply of silver for coinage, notwithstanding the very great advantage which could come to those countries by currency stabilization. The vast importance to the United States of the stabilization of industrial conditions of Europe cannot be over-estimated.

The great question then is—by what process can European countries be supplied with and led to use the silver as a basis of their currency mediums. So long as the Pittman act is in effect, this is not a vital problem to the silver producers of the United States. The day is not so very far distant when the production of this country will be necessarily thrown upon the world market, which under present conditions would still further depress the price of silver. The industries of the United States will feel very keenly the effect of depressed silver prices upon the cost of lead and zinc and other industrial minerals which comes in association with silver. In mines which produce these metals in combination with silver, and their number is very great, the reduction in silver prices must necessarily attach itself to lead and zinc and those minerals which come associated with silver. This will necessarily increase the price of lead and zinc to the consumers of this country and the question of future silver markets then becomes a vital question to the whole country.

The use of silver with value based on the gold standard as a medium of exchange in European countries is therefore a vital issue to all of the business interests of the United States. While this country may well keep itself aloof from the entangling intrigues of European politics, it cannot escape the influence of world conditions in finance and industry.

Two committees are now engaged in an effort to solve some of these difficult problems. The first appointed by a conference of western senators which agreed upon the

following committee: Key Pittman, of Nevada; Thomas J. Walsh, of Montana; William H. King, of Utah; Samuel D. Nicholson, of Colorado.

This committee organized by the selection of Senator Pittman as chairman and J. F. Callbreath as secretary.

A committee has been appointed by the American Mining Congress consisting of C. F. Kelley, chairman; F. Y. Robertson, F. H. Brownell, Bulkeley Wells and Prof. J. W. Jenks. Readers of the MINING CONGRESS JOURNAL who have any suggestion to offer as a solution of the silver problem are urged to send their suggestions to this office and careful consideration will be assured.

### THE HOPELESS, THANKLESS TASK

**T**HE PUBLIC has never understood the coal question. Therefore, it has never felt any warmth toward the coal industry. But few coal men even have studied seriously the point of view of the public. Therefore they feel a certain strong resentment of the constant public criticism. Thus the relations between the market and source of supply have been strained for some years. These have not been improved by the actions of the regulators who started out to destroy coal only to become its apologists.

The Federal Coal Commission must step in between these irritable groups; try to reach a finding which will explain one to the other; and possibly set in motion those changes of practice which ought to remove the causes of friction. That is what it is supposed to do. That is what it will try to do. But, there are three participants in every coal transaction—the producer, the carrier and the consumer. If the commission finds a fault in any one of the three, it will but draw down upon its own head the hostility of that party. If it does not find a fault, it will be accused of whitewashing the party who is supposed to be guilty, or it will be accused of dodging the issue. It is most likely to be condemned for any kind of a decision it may make. Its only hope of escape is to rise above the quarreling rabble and to point to one new and outstanding truth with such vividness and directness that all must see it and be charmed by the boldness of the commission in announcing it. Since the changes of escaping condemnation are so rare, the commission has truly a thankless job. Honest men must sympathize with it.

Congress—wholly innocent of any intention to impose an impossible task upon anyone—instructed the Federal Coal Commission to report upon such matters as the "methods of mining" and the "cost of production." Naturally, the methods of mining must vary with each variation in the character of the strata above and below the coal. That is, there are so many variations from any method that the method itself is almost lost. Inevitably, the cost of mining must vary with each change of method. Thus there is and can be no single "cost of production." There is possible, even, no close approximation to a few simple groups of costs into which every man's performance may be classified.

The people, at the minute, are heartily sick of war talk; it brings back too vividly to their minds thoughts of the times they have lived through and which they are struggling to forget. They have quit going to see war pictures. They turn abruptly away from the doors of theaters where war plays are offered. They leave war books unsold on the shelves of the booksellers. They are tired of war. And with it, and because of it, they are tired of all history—of everything which has to do with the past. When the public has thus turned its back upon everything having to do with the past and when it is either living vividly in the minute or is dreaming of the



future, the commission must try to interest it in a review of the past of coal.

Not to bother the public too much with stories of ancient history, the commission has decided that it will deal only with the record of the last ten years. It is asking miracles of the public to believe that, in its present mood, it will go back even ten years in the history of anything. It is asking miracles of the commission to expect that by a study of ten years only, it can get at the truth about coal.

Ten years takes us back to 1913. That was a normal year. But, '14 was disturbed by the declaration of war; we lost business and activities in coal were subnormal. In '15, we felt the pull of Europe for coal and our business began to be abnormal. It continued that way through '16, '17, and '18. Then, '19 was nearly normal. In '20, we had the panic; in '21 we had the depression; and, in '22 we had the great strike. Thus only two years out of the ten have been normal; the others have been subnormal or abnormal for various reasons.

Thus, the commission is expected to take information of which 80 percent runs to one extreme or the other and out of it to fashion a story of what the normal coal industry ought to be in peace times. No one but an ignorant man or a man of great moral courage would undertake such a task. It is impossible to suppose that any one of the eminent gentlemen selected to fill positions on that commission were ignorant of the task imposed upon them. We must, therefore, assume that they undertook it, knowing how hopeless an enterprise it is.

Their willingness to sacrifice themselves in an attempt to perform a task which is palpably thankless and obviously hopeless causes one, who stands by to look on, to raise his hat in admiration and to conclude that acts of patriotism are not wholly lacking in times of peace when great public questions need illumination.

### MYTHS AND MALCONTENTS

IF THOSE malcontents, those destructive critics of our government and its methods, those red and pink and lavender tinted semi-socialists riding over good roads in cheap automobiles could be plunged back into the early days of our Republic so that they might see the labor and sacrifice and striving by which this organized government was brought forth it would surely change some present popular modes of critical thought. If those of us who are prone to complain of our post-war burdens, a complaint which voices itself in every election by a vote which is neither for or against either party but is "agin the gov'ment," could study some of the post-war burdens of the Revolutionary War we would not so curse the government when we sit down to dinner after a hard day with the Income Tax unit or feel such an unfavorable pang when we pay 10 percent tax on theater tickets.

Yesterday I saw an old print of the operations of the first mint in Philadelphia, a highly idealized picture with George and Martha Washington watching workmen with hand press break up family silver which had been donated by patriotic colonists, heirlooms which they had brought with them from England—their most priceless possessions—to give to this country its first coinage. We had no precious metal production then. We had no means of immediately buying silver and gold. This was the beginning of the financial system of a country having a total stock of money on the first day of November of \$8,438,661,623. As our major basis for comparison in the United States is in the dollar ratio this should be impressive.

### FOREIGN TRADE

DURING the two years prior to the passage of the tariff bill we were constantly warned by gloomy predictions of what would happen to our foreign trade in case our domestic industry should be properly protected. "You can't sell unless you buy," and similar half-truth slogans were continuously dinned in our ears.

We may pass over entirely the fallacy of such reasoning. It overlooks the real principle of protection, which is not prohibition but the purchase of foreign goods by American consumers at prices which are competitive with American cost of production. We may overlook the well-known economic fact that our imports have continuously increased as our nation has grown, regardless of the policy of protection of free trade which might prevail at the time, while the nature of these imports has decidedly changed under the respective policies. We may disregard the truth that our foreign buying power is entirely measured by our internal domestic prosperity which is based on production and not on retail merchandising. We may put aside all these facts while we view our tendencies and developments in foreign trade since the tariff bill went into effect. The predictions of all these "Gloomy Gus" prophets are not coming true.

There is a bigger demand for foreign shipping bottoms for export of American produce than at any time in the last two years. On the Pacific coast especially there is tremendous demand for bottoms for the export of agricultural products. The countries to which exports are showing increases are England, Germany and South American countries, those whose trade we were especially warned we would lose.

After the clamor has died down we find that these countries continue to buy from us as heretofore.

They have tariff laws of their own. They didn't expect all of their anti-tariff propaganda to be accepted. They would not have respected us much if it had been. No nation long respects another nation which does not have a self-sustaining internal economic life.

### PRICES AND WAGES

IT WAS PREDICTED by the MINING CONGRESS JOURNAL some months ago that we were then entering upon a new period of inflation.

The adjustment of coal miners' wages on the basis of the war peak level followed by the advance in the wages paid by the steel industry set the pace for a general increase in the wage scale which necessarily manifests itself in the price of the products of which labor is the most important cost. The average October price of all commodities increased 6.7 percent over the previous month and ranged 17.5 percent higher than during October, 1921.

Higher wages must necessarily be offset either by increased efficiency or by higher priced commodities. Unfortunately, higher wages mean decreased efficiency and the alternative of higher price levels is the necessary result.

Blind indeed is the man who does not see that a uniform increase in wage levels means a similarly uniform decrease in the purchasing value of the wages so advanced, excepting only that part which represents the original cost of the raw material used in production.





# MINING INDUSTRY OF WEST IMPROVES POSITION

*General Renewal of Interest and Activities Noted by Observers—Labor Conditions Show Improvement—Many Mining Men Placed in State Legislatures and Administrative Offices by Recent Balloting*

**C**ONDITIONS affecting the western mining industry as a whole are more favorable than for many months, according to the opinion of observers who are intimate with current developments.

## NOTEWORTHY CHANGES SEEN

Renewed interest and activity among owners of zinc, lead, manganese and tungsten properties and some relief in labor shortage are noteworthy recent changes in mining condition in the West. Advanced lead prices are having effect on silver production, resulting not only in reopening of old silver lead properties but work on new prospects. The enlarged activities are increasing demand for labor in the aggregate, but the supply has been measurably increased by the release of men from public work, such as highway building, and from ranch work, due to winter. Not all mines, however, have full quotas of labor, some states lacking a thousand to two thousand men. The copper mines are said to be generally supplied.

Mining men and organizations are prepared for possible attempts to enact radical and adverse laws in the state legislatures which meet early in the year in Western states. Some fear exists of radical labor agitation, but such troubles will be local and can probably be averted.

It is said, too, that shortage of cars has had effect on some sections, but experienced observers fail to see that such shortage is radically hurting the industry, although local situations are tense in some cases.

The Colorado election was a victory for mining, which in many districts is 100 percent improved over 1921, when zinc, lead, tungsten, manganese and the radium minerals were all exceptionally low in quotations. Labor is now stabilized with room in Colorado for one thousand to two thousand more men who understand mining. The advance in wages over last year is 50 cents per shift.

## "COME-BACK" FOR MINING

A constitutional amendment to reapportion seats in the state legislature on the basis of the 1920 population was defeated by a two to one vote. Even Denver—which would have gained at the expense of the mining counties—voted against the proposition, believing that mining in 1923 will stage a phenomenal "comeback."

Senator W. E. Renshaw, of Idaho Springs, who holds over, will be chair-

man of the Mines and Mining Committee in the Senate, while Senator John H. Slattey, a prominent miner and leaser of Silverton, was complimented with another election.

There is a noted interest in the application of electricity to ore treatment, as Colorado is able to furnish any quantity of "power" at a reasonable cost.

Utah did not elect any mining men to state offices this fall on the face of the present returns. Ernest Bamberger, who is general manager of the Ontario Silver Mining Company and a director of the Utah Chapter, was nominated for the United States Senate on the Republican ticket, but as the situation now stands was defeated by Senator William H. King. Senator King is an attorney by profession, but his financial interest in Utah mines and his law firm, which also includes Representative E. O. Leatherwood of Utah, handles a good deal of mining business. Representative Don B. Colton of Utah, like Senator King and Mr. Leatherwood, is an attorney who lives in a region of great mineral potentialities with improved transportation—the Uintah Basin of eastern Utah. Several mining men will sit in the next state legislature.

## A NEW OPPORTUNITY

Montana is beginning to see the light of day in regards to public sentiment looking with favor upon the mining industry, in the opinion of observers who have been studying the post-election situation.

After two years of an administration which many have felt to hold a negative attitude toward the mining industry of the state, it is being stated by mining men that they will be given a fair opportunity under the new order.

In the vast majority of counties, legislators have been elected who are opposed to the tax program held by the head of the state administration and who favor an elimination of what are termed as the many expensive political boards which are a part of the present system. The general tendency on the part of the public as deduced from the election results is to hold the reins during the next two years so tightly that no machine will be allowed to spring up within the legislative bodies that might handicap the mining industry.

Montana livestock and agricultural interests have suffered greatly during the past four years from drouth and mining

and lumber interests have been hampered by financial depression. Taxes have crept higher and higher, and urgings of the administration have been to heap these taxes upon the mining interests, attempting to make the agriculturalists believe they would thereby lighten their own load.

The Senator-elect, B. K. Wheeler, is a resident of Butte, Montana's great mining center, where he owns a large hotel and other property. His election means a friend of the mining industry, and he is certain to give mining his most friendly consideration.

## MINING WELL REPRESENTED

With Senator Key Pittman and Congressman-elect Charles B. Richards as its representatives in Washington during the next Congress, the mining industry of Nevada is well assured of its full quota of legislative attention at the nation's capital. Both legislators have long been connected with the industry, having been operators of metal mines in Nevada.

Col. James G. Scrugham, Governor-elect, is a mechanical and electrical engineer, succeeds a mining engineer, Hon. Emmet D. Boyle, the retiring Governor. A. J. Stintson, Ed Malley and George A. Cole, all former miners, were reelected State Mine Inspector, State Treasurer and State Controller, respectively. All other state officers and many members of the legislature have been more or less connected with mining, that being the principal industry of Nevada.

Industry, as a whole, and many leaders in the west are protesting much against the increasing loss to the government because of the great volume of tax-exempt bonds offered and absorbed. This annual loss is now about \$120,000,000 and represents the tying up of more than ten billion dollars in such securities. The effect of such a great loss in revenue is a matter of national concern, and the end is not in sight.

Yet, one industry alone—mining—would have suffered an annual, unfair loss, of probably \$150,000,000, if the depletion clause had not been included in the revenue laws, as a result of the interest of the American Mining Congress.

It is reported the Salt Lake City Chamber of Commerce and Commercial Club is to sponsor a half-million dollar prospecting association, to provide with cash and supplies the men who are willing to go into the hills of Utah and hunt valuable minerals.

# WESTERN RAIL MERGER HEARINGS HELD

*Interstate Commerce Commission Hears Testimony in Case Involving Relations Of Southern Pacific and Central Pacific Lines—High Interest Held for Mining Industry—Utah Chapter Acts*

**A**IRING A HOST of intricate details arising out of efforts to break the relationship of the Central Pacific lines to the Southern Pacific System, the merger hearing before the Interstate Commerce Commission last month brought to Washington's limelight a highly interesting industrial situation. Witnesses presented "strongest reasons for the rejection of the proposed temporary lease of the Central Pacific lines by the Southern Pacific Company," or "maintained" that the proposed merger "is a boon to the public interests," as their position on the subject dictated.

At the conclusion of one of the advanced sessions of the hearings unofficial observers indicated their opinion that the commission would approve of the merger under the provisions of the transportation act, despite the fact that the Supreme Court of the United States had directed that the merger be dissolved. This opinion, however, made no pretense of anticipating the commission's action, for so many factors and variable details entered into the situation that only after deeper study will the decision be possible, and none at the time the hearings were held could forecast with certainty how the commission would interpret the results of the study.

## VAST TERRITORY AFFECTED

Territory including many of the foremost mining districts of the west is included in the vast stretches tributary to the Southern Pacific, the Central Pacific and the Union Pacific, the last system seeking a dissolution of the merger. Interest among the mining men, therefore, is high, for the vital issues of rates and service are seen by many to be on shifting ground.

Previous to the opening of the hearings, the Utah Chapter of the American Mining Congress adopted a resolution expressing the opinion that, "It will be in the best interest of the public of the state of Utah and the metal mining industries of this state that the ownership and operation of the Central Pacific Railroad Company should remain as it now is with the Southern Pacific Company."

The resolution took the stand that dissolution of the merger would lead to "domination" of the state by the Union Pacific System, with the Utah basin, now without railroad facilities, most likely to suffer because of lack of encouragement for building of a railroad from the terminus of the Moffat Railroad in Colo-

rado. "It is the common experience in the mining industry, as in other business, that the development of new territory, construction of spur tracks, and the development of other railroad facilities is more readily secured where competition is present than under one railroad domination," concluded the resolution, copies of which were sent to the Interstate Commerce Commission and to state authorities.

Protesting against adoption of the resolution, a statement was issued by the minority members present at the meeting when the action was taken. This protest states that the Southern Pacific system has not served the interests of the mining industry of Utah; that the question should be given full and free hearing and consideration from the viewpoint of what is best for Utah, its citizens and industry. The statement is signed by George W. Lambourne, president of the Park City Mining and Smelting Company, and J. W. Whitehill, ore purchasing agent for the International Smelting Company.

## CONTRARY POSITION TAKEN

A similar position was taken by the representatives of the Colorado Producers' Association. Fred H. Wood, attorney for the Southern Pacific, at the outset of the hearings, declared that his interests would move to strike the association's petition against the merger from the record, declaring, "Our ground is that the name of this association is merely an alias for the Union Pacific Railroad." Edward F. Tredwell, appearing on behalf of the association, replied: "We will meet and rebuke that charge, and we will resist any effort to strike our petition from the record."

Petitions to intervene were filed by the Western Pacific Railroad, the Railroad Commission of California and Public Utilities Commission of Colorado and a large number of shipping interests in Pacific coast states.

Louis J. Spence, director of traffic for the Southern Pacific, was the first witness. He maintained that the Central and Southern Pacific lines had been interdependent for more than 50 years and that the earning ability of both roads depends upon complementary relations.

"The unmerger means real competition in Central and Northern California; two railroads where there is now one, with all which that implies," C. R. Gray, president of the Union Pacific Railroad, de-

clared in commenting on efforts to prevent the unmerger.

"The natural result of competition has always been to stimulate the lines involved to the highest endeavor in service, attention to public interest, and provision of facilities fully apace with the necessities of a growing territory with expanding traffic. It means a railroad eastward through Ogden in competition with the Western Pacific through Salt Lake City, the Southern Pacific via El Paso, Galveston and New Orleans, and the Santa Fe through Mojave and Albuquerque; nearly an ideal condition, calculated to bring out the best qualities of each route. It means that a fourth railroad, with vital local interests and no conflicting ideas, is added to California's assets."

## "MERELY A PAPER DIFFERENCE"

The difference between the Southern Pacific and Central Pacific systems exists merely on paper as far as operating conditions and traffic movements are concerned, testified F. L. Burckhalter, assistant general manager of the Southern Pacific lines at San Francisco.

He pointed out that the lines in Oregon and Washington would be completely severed from the remainder of the Southern Pacific system if the Central Pacific is removed from the coordinated relationship for operating purposes.

The Southern Pacific stands ready, if its application for temporary lease of the Central Pacific be granted, to make certain important improvements of facilities and trackage on Central Pacific lines, J. Kruttschnitt, chairman of executive Committee of board of directors, Southern Pacific Company, told the Commission.

"Whether unified control continues or ceases, capital expenditures should be on the Central Pacific to provide increased facilities for the handling of traffic both as to second tracks and facilities at important traffic centers," Mr. Kruttschnitt said.

"It would seem to be folly to disrupt relations that have developed in 50 years of experience in operating these properties unified in order to make such a doubtful experiment pending the determination of consolidation proceedings wherein under plans now before the Commission the retention of these lines as part of a single system is contemplated."

# A CLIMAX IN ALASKA'S DRAMATIC CAREER

*Government Forced To Sit Down at Foot of Wall That Has Halted Its Efforts To Link Private Enterprise with Large-scale Development and Mining of Alaska's Coal—Barrier Built by Acts of Previous Administrations*

By IRA L. SMITH

THE GOVERNMENT has given up efforts to link private industry with development of Alaska's coal in the Matanuska field. After striving valiantly but vainly to find some "angel" to take over operation of the largest coal mine in the territory on a commercial basis, officials have decided that the coal will not be brought to the surface in quantity unless a national emergency arises to prompt the government to mine coal at any cost so that the Navy's ships may be supplied with fuel from a source on the Pacific coast. These officials have come face to face during the past few months with unimpeachable evidence that private capital will not enter into any agreement for development under present conditions with no assurance of a margin of profit. The high cost of mining, isolation of the beds, and other variables preclude possibility of any such assurance except in cases where operations of comparatively small scope deem it profitable to mine coal to supply demands within the territory.

## LOUD CRIES ROUTED CAPITAL

While announcement is being made of the government's failure to link private enterprises on a general scale with operations in the Chickaloon field, where \$1,500,000 has been spent in development, echoes ten years old bring up the cries made by alleged "conservationists" in days gone by. These echoes carry the wails and woes that were distributed over the country during the Roosevelt and Taft administrations when the people were told that "monopolies" were getting control of the Alaska coal fields. It was then that wholesale withdrawals and stifling legislation, accompanied by eccentric administrative plans, cut down whatever pioneering ambitions a risk-taking industry may have possessed. Fifteen years after this hue and cry succeeded in choking commercial development, the government finds itself unable to find one single company in all the United States that is willing to lease the properties that once were supposed to magnetize covetous eyes.

The Chickaloon mine, around which the earth has been stabbed by diamond

drilling in the efforts to find a more inviting site for operations, has been given the cold shoulder by commercial interests and now will be able to serve as nothing of more constant producing ability than an underground storage plant for naval coal.

## THE NAVY'S VIEWPOINT

It was a desire on the part of the



The end of the Healy River spur of the Government railroad in Alaska, showing the outcroppings of coal from which the territory will derive much of its domestic fuel supply.

government to develop a supply of coal on the Pacific coast for the Navy that drove the federal authorities with such determination into a study of the territory's deposits. This study was directed along two lines—efforts to determine mining conditions on one hand and quality of coal on the other. Now the Navy stands convinced that the mining conditions are such that under none other than emergency conditions can operations be carried on in large scale. This is not a situation calculated to warm the cockles of an optimist's heart. But the Navy has gathered some cheer during very recent days when investigations into the quality of the coal are understood to have proven that the product of the Matanuska field can be used on the grates of the naval vessels. The recent tests under naval boilers of 5,000 tons of washed Chickaloon coal, it is indicated, have proven to officials that the deposits do possess the quality which will permit them to stand as a source of emergency fuel for the Navy. The satisfactory result of the tests is the vital factor determining that the coal

shall be kept in underground storage.

Naval officials apparently are glad that the show-down has come, feeling that definite knowledge of what they might expect from the Matanuska and Bering River fields is the most valuable asset they can gain in their efforts to provide a supply of coal that can be rushed through to their boilers in times of emergency. Whatever expenditures have been made by the government in developing this knowledge, they say, have been well applied, according to the gauge of national safety.

A history of the operations which have developed the knowledge now held runs back to the days in the last decade prior to enactment of the leasing act. Joseph A. Holmes, the first director of the Bureau of Mines, visited both the Matanuska and Bering River fields in 1911, giving his personal attention to the problems which had been brought into the limelight by reason of the wail and woe sounded by alleged "conservationists" who declared that the natural resources of Alaska were being gouged by "monopolies." Dr.

Holmes was impressed by the quality of the coals, but indicated that he foresaw the difficulties and high mining costs that would be involved in development work and future operations.

## WHEN BARRIERS WERE BUILT

The coal lands already had been reserved from entry when the leasing law was passed in 1914. In pursuance with this act, the known coal lands were segregated into blocks for leasing.

Little or no coal mining had been undertaken by private enterprise when in 1915 the government entered upon its program to construct the Alaska Railroad. Withdrawals from entry of coal lands during the Roosevelt administration, followed by the clinching action taken during the Taft administration when an act authorizing the withdrawals was passed by Congress, had stifled any ambitions that may have exceeded the normal in their spirit and fervency, and the blocking off of tracts under the leasing act had not played the part of an inspiration to these ambitions. So, when plans for construction of the railroad



were laid, it became evident that coal would have to be provided. Importation was out of the question, because of the cost involved.

To accomplish this result, the Alaska Engineering Commission entered into contracts with private enterprise designed to open mines in the Matanuska field. The difficulties which these contracting companies encountered caused them to cease their activities. One of the mines was taken over by the commission and furnished the coal for the building of the railroad.

#### QUALITY OF COAL ASSURED

The Navy had taken a sample of coal from beds further east in 1913, and, in efforts to stimulate development of the territory's coal deposits, the commission ran its tracks to this point and began exploration and development work in that section, situated 74 miles from Anchorage, in the Chickaloon district.

Four years later, in 1919, the Navy evidently realized that development of the Alaska fields was making such slow progress that its fond hopes for a Pacific coast source of coal were left hanging in mid-air and would remain in that position until the possibilities of the fields could be proven. Accordingly, in 1920, the Navy Alaskan Coal Commission took over supervision of the work on the Chickaloon mine, carrying on this work until May 1, 1922, when concrete results drawn from the intensive studies showed that the time had arrived when a definite idea of the willingness of private industry to undertake continuation of the work must be gained. Since the Navy obviously was not the branch of the government to make advances in this direction, the entire supervision of the work was returned to the Department of the Interior in May, 1922.

The officials of the Department of the Interior then found themselves confronted with this situation:

1. Because of economic and physical handicaps, private enterprise had remained aloof from the fields since the days when the coal lands had been withdrawn by the Roosevelt administration, through the period of enactment and early administration of the leasing act and down through to the present year.

2. The Navy had carried its activities to the point where industry had to be called in if possible, it being realized that the Navy Department could not logically engage in the coal mining business, and no funds being available for this additional development even had it been considered the feasible move.

#### IN SEARCH OF INDUSTRY

Immediately, the Bureau of Mines was deputized with the task of seeking to

find some branch of private industry that could be willing to consider the matter of entering into this development. Hope that this search would be successful mainly was centered in the belief that the high quality of the coal and the amount of work already performed would offer sufficient inducement.

Ten large coal producing companies of the United States were approached on the subject, and, although several studied the situation in degree, only one, the Lake and Export Coal Company, of Huntington, W. Va., saw possibilities of surmounting the handicaps. This company was offered several weeks in which to make a study of the property and possible markets with the possible culmination of entering into a lease.

The corporation made an intensive study of the situation, sending a corps of engineers to the Alaskan field, only to come to the conclusion that the cost of producing coal from the Chickaloon mine would be too great to allow of competition with coal brought through from the eastern fields of the states.

Following decision of the Lake and Export Company to not take part in the development, the Bureau of Mines officials found that not one single company of sufficient standing and magnitude to enter into the undertaking was willing to do so.

Thus faced by a stone wall so far as further progress in that direction was concerned, the matter was allowed to rest while the coal strike diverted officials' attention, until the decision reached very recently under which the mine will be transformed into an underground coal storage plant for the Navy.

In addition to the Eskla and Chickaloon mines in the Matanuska field, two other properties—the Evan Jones and the Baxter—located on leasing blocks, have begun to ship coal.

#### NENANA FIELD HAS FUTURE

Extension of a spur of the railroad to the Nenana coal field on Healy River gives promise of offering the territory its best immediate opportunity for coal to satisfy local demands at a price of comparatively low plane. The lignite and sub-bituminous deposits of this section appear to be on the threshold of the greatest amount of prosperity that yet has come to coal mining operations in the territory.

A few companies have taken leases in the Bering River field, but to date the Bering River Coal Company has been the only one to urge its exploration work along, and the faults and other handicaps encountered have halted extensive operations in this case.

Throughout the whole history of development efforts in the Alaska coal fields runs the fact that the coal cannot

be mined at a profit unless sufficient market is provided, and that a sufficient market can only be provided if the entire territory takes on some semblance of general industrial activity.

#### THE RESPONSIBLE FACTORS

Those who have made a close study of the situation confronting the territory during the many sub-normal days that have followed the bonanza era, declare that two factors for which the government is directly responsible have brought about the conditions which have sprung up during that time and which now shackle efforts toward industrial resuscitation. These are pointed out as being the responsible factors:

1. Withdrawals and subsequent application of the leasing law in cases where the physical handicaps alone would have offered obstacles sufficient to tax the ability of private enterprise to operate successfully.

2. The general scheme of administration of the government's affairs in Alaska under which a score or more of various federal agencies have come to play the part of so many superfluous cooks spoiling the broth.

That the government during the last decade should have placed the restraint of withdrawals and the leasing act upon coal lands which no large coal mining company in the United States will undertake to develop at the present time indicates to observers that the policy initiated several years ago is obviously at fault.

#### BRITISH COAL INDUSTRY LOSING MONEY

SINCE the closing months of the year 1920 the British coal industry has not been paying its way, says Trade Commissioner Dye, London, in a report to the Department of Commerce. Losses began to make themselves manifest before the government control ceased in the spring of 1921. During 1921 the coal trade shared in the general depression and no profits were anticipated. The fact which is causing the most serious concern at present, however, is that the trade has not been able to recover since the strike, and is not now making sufficient profits to form an adequate return on the capital invested.

**RUSSIAN COAL TO ITALY**—A contract has been made between the Russian Soviet Government and an Italian firm in Milan under the terms of which Russia is to deliver 200,000 metric tons of coal and 30,000 metric tons of mineral oil, and the Italian firm to deliver railroad material and machines for the naptha and coal industry.





VIEW OF THE HARBOR OF DULUTH

Through this transportation center passes a vast portion of the mine and farm products entering into the shuttle-like movement of commodities across the lakes

## THE STORY OF ONE COAL MARKET

By GEORGE H. CUSHING

**A**NY ONE WHO understands simple arithmetic can readily grasp the fact that the coal industry has lost its balance. But it will require something more than simple mathematics to restore the lost equilibrium. As matters stand, the facts are:

The Interstate Commerce Commission has just finished a hearing in which the railroad men and the coal men gave their views of the questions of assigned cars and car distribution at the mines. Somewhere in the hearing the old familiar figure came out that the bituminous coal mines of the United States have now a noted productive capacity of 19,000,000 tons per week. The companion fact also came out, viz: that when we are moving to market less than 10,500,000 tons per week we are shipping more coal than the country can at the minute use. If these figures are correct, and there is no good reason to dispute either, they mean that the bituminous coal mine can produce today nearly twice as much coal as the country wants. Despite that fact, we have coal prices which are so high that the public complains about them and the coal operators resent them.

### MYSTERY IS ASSUMED

Every statement that has been made about coal for the last seven years has had in it somewhere some reference to the fact that the bituminous coal mines are overdeveloped. And yet, while admitting that coal mines have steadily an unused and unusable capacity, everybody assumes to see some mystery in the fact that for those seven years prices have been constantly high at the market. Of course, there is no mystery. The only

thing is that, seeing the truth, we will not recognize it.

Before, however, we can pin the bouquet where it belongs we have to measure the extent to which prices are unusually and abnormally high at the market. We have so much coal in the ground that we have mined out, since 1807, only about three-tenths of 1 percent of our original deposit. That leaves 99.7 percent of the coal still in place in the ground. With so much coal remaining unmined and even undeveloped for mining, it is perfectly obvious that if the business should ever become uniformly profitable, a flood of new competition would be invited in to destroy the profitability of the mines already in existence. That is something which every operator of any experience knows as a result of his experience.

### ONLY MEANS OF SURVIVAL

Therefore, it is known that only those coal operators who are good managers—who can put their cost of production below the point where it is possible for unintelligent competitors to reach—can possibly survive and make any money. This means that, under ordinary circumstances, the very top price which can be charged for coal is just a little below the figure which would make the industry uniformly profitable. Also, coal prices can never go below a point where the best managers cannot make at least their cost of production. To go below that point would be to involve the whole industry in bankruptcy.

Thus it is obvious that if everything, outside of the coal industry, is all right, the maximum spread of coal prices can only be between the points where the in-

dustry becomes uniformly profitable and uniformly unprofitable. There is no exact way to measure this maximum spread, but I am perfectly safe in saying that it does not exceed \$1 per ton.

In recent years, however, coal prices have been fluctuating freely over a range of \$5 a ton, or more. This means clearly that everything is not all right, *outside* the industry.

### EXPECTED EFFECTS RESULT

The high prices at the mine, however, have produced the exact effect which the operators of experience knew quite well would be produced. That is, high prices brought into the market a tremendous amount for new competition. While, therefore, the price was increasing the competition at the mine, and hence was increasing the potential productive capacity of the mines, it was not increasing the amount of coal delivered at market. The mines were obeying the economic law and paid high prices for it.

It is obvious that the reason coal did not get to market was not because the operators could not produce it but because the railways were not able to carry it. That is self evident. It seems almost a waste of space to say it and a waste of time either to write it or to ask any one to read it.

The present purpose is not to argue that subject through to its logical conclusion because a mere statement is sufficient. The real purpose is to show, by one concrete example, how by meddling, which brought bad management, the railroads have been allowed to deteriorate into a position where they are unable to carry the commerce of the coun-

try. It must, however, be understood that while this is typical, it is by no means a complete exposition of the causes of railway decay. It points to the character of causes without attempting a catalogue.

#### THE LAKE ROUTES

We have on the northern boundary of this country a series of five lakes which present to the nation a transportation route about 1,500 miles long. Gathered around the upper portion of those lakes are the farms which grow a great quantity—a major percentage—of the food for the east and for Europe; the iron ore mines which supply easily 85 percent of raw material for our steel industry; and, the copper mines which supply a considerable percentage of our high grade copper. Around the lower end of the lakes are clustered 50 of our cities of largest population which must be fed and which have an insufficient local supply of food; the blast furnaces and steel mills which exist because of this iron ore; the centers of electrical manufacturing which depend upon copper; and, the coal mines which supply the grade of coal needed alike for the people of the east and the people of the northwest.

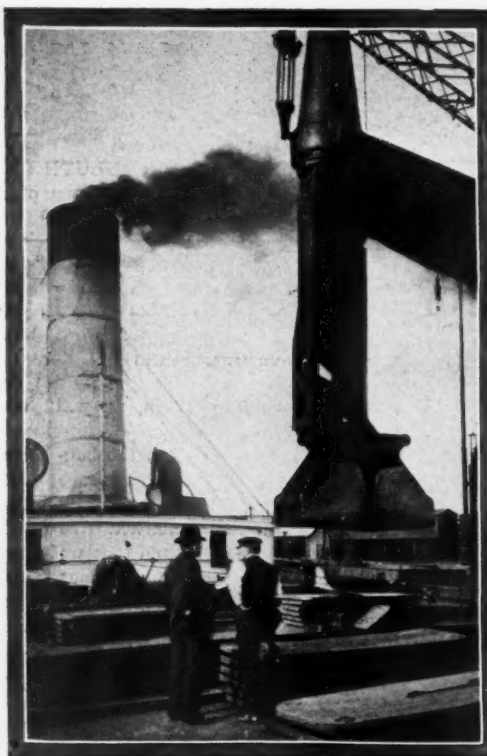
On the lakes we have upwards of 3,000 ships which, since 1871, have been carrying ore, grain, copper and lumber down the lakes and have been carrying coal up the lakes. The same boat which carries one kind of traffic down the lakes is equipped to carry the other kind of traffic up the lakes. In the natural adjustment which has been effected through fifty years of experience, the revenue that is necessary to the vessels is obtained, in major part, from the down bound traffic in many things, but, in essential part, from the up-bound traffic in coal.

#### A CALCULATED DEVELOPMENT

To do the lake coal business we have equipped hundreds of coal mines in the east; have built up expensive carriers between the mines and the lower lake ports; have constructed enormous and expensive docks at both ends of the lakes; and, have accustomed the people of the northwest to use this particular kind of coal. The people of the northwest have, therefore, come to know that they are trading traffic with the people of the east. They are sending grain, ore, lumber and copper east. They have been drawing coal from the east. They have sold four things and bought one. They got a good grade of coal, inci-

dentally, at a reasonable figure but they have also and thereby cut the transportation rate on everything which they had to move to market.

One of the iniquities which the U. S. Fuel Administration foisted upon the country was the "zoning system." This zoned certain coal out of the northwest and zoned certain other coal in to take its place. The whole new scheme was introduced, of course, as a war measure.



#### A HUGE MAGNETIC ARM

Loading and unloading devices of high ingenuity have been developed to handle the vast tonnages involved in traffic on the lakes. This derrick makes a regular business of lifting ten-ton masses of iron out of the holds of steamers

It was meant only to supply temporarily the people of the northwest country with a coal which they could use in substitution for the coal to which they had been accustomed.

The Fuel Administration believed that this great shift of an economic center of gravity would have no after effects. As a matter of fact, it did have a very grave aftermath—the partial elimination of eastern coal from that western market. It is hard to understand how far this has gone. It is impossible to say how far it is going. I am not, of course, discussing the competitive struggles between any two groups of coal producers. That is wholly beside my point. As to the merits of their respective coals and as to the chances of success or failure of one or the other in con-

quering that market, I have nothing to say. What, and all, I am talking about is the influence of this great and sudden change in the source of coal supply of a whole section upon that complicated lake transportation system which threatens to come about by the withdrawal from the lake traffic of a certain quantity of coal which customarily moves into the northwest.

#### THE EFFECT UPON INDUSTRY

It is evident that if we should subtract the total upbound movement of coal from the lake trade—and we cannot understand what is going on unless we see things that way—we would rob all of the boats at once of any up-bound cargoes. The effect would be immediate. The vessels which have a certain fixed operating expense to pay would have to collect all of the money to pay all of their expenses from the owners of the down-bound cargoes. This would happen for the simple reason that they would have no up-bound cargoes. Therefore, that portion of the round trip rate which formerly was borne by the coal industry must thereafter be paid solely by the ore, grain and lumber industries. These shippers would have to pay all of the cost of maintaining the lake fleet. This would mean, of course, that the transportation charges paid by the down-bound shipper would instantly and automatically be increased.

The effect in case of grain is easily understood and would be the most pronounced. The northwestern grain grower must sell his wheat in New York Harbor at a price which is in competition with the price at which the wheat of the world is offered for sale. Anything which the wheat grower pays for transportation he must, of course, deduct from the New York price, to get his "farm realization." Therefore, any increase in lake transportation charges means an automatic decrease in the price of wheat at the farm. It is now evident that a loss of coal traffic on the lakes means an increase in the lake rates to every other shipment. Thus a destruction of the lake coal traffic is felt immediately in the purse of every northwestern farmer.

#### A UNIVERSAL BURDEN

To a certain definite and marked extent the same thing must happen with every other shipper of the northwest. That is, the ore rates—without any coal for the ships to move—must go up 25

cents a ton. Lumber rates must rise 25 percent. Everything must pay more.

The consequences, however, do not begin to end there. The railroads which serve the lower lake ports have likewise built up a balanced traffic. That is, they have carried coal to the lakes and have carried iron ore away from the lakes. They have, through 50 years, built up a system of rates which is closely comparable to those on the lakes. They have modified both the coal and the ore rates because the cars have loads in both directions. If, therefore, the coal traffic is withdrawn, the railroads must increase their ore rates sufficiently to pay for the round trip of the car from the dock to the blast furnace.

While we are talking about the consequences in that latter direction, we have also to take into account the fact that, through 50 years, coal mining corporations of large size have been built up to supply this lake coal tonnage. If those mines fail to move by the lakes they must, to a certain extent, go out of business. They must write off to profit and loss the equipment which they have built up to serve the lake trade.

#### A POTENTIAL DISASTER

At the northwestern end of the lake route we have consequences from a transportation standpoint which are equally amazing and potentially disastrous. So long as eastern coal dominated the northwestern market, the railroads had balanced traffic in that section also: they carried ore and grain to the Upper Lake ports. They carried into the interior, in the same cars, the coal tonnage which was to satisfy the needs of the northwest. One set of cars served both lines of traffic. One set of engines hauled loads in both directions over one set of rails. It was a shuttlecock movement from point of origin to point of distant destination; the lake and rail lines joined in a traffic movement which made the utmost use of a given quantity of transportation facilities.

However, when eastern coal was zoned out of the northwestern trade, other coal from other fields had to be carried in. The minimum distance it had to be hauled was 700 miles. This brought into use, not the cars and engines which had been and still are being employed in the ore, grain and lumber trade, but a new set of cars and engines employed solely in the movement of coal from this new source of supply. The old cars and engines are still hauling the old commodities to the lake ports but they are going back into the interior without loads. This new coal movement is bringing coal from distant fields into this market in cars which are subtracted from the regular trade of those fields and

are taking out of the regular trade engines which ordinarily would be employed in the shuttlecock movement between the docks and the interior. Thus there are not enough engines for the dock trade, there are not enough for the new coal movement. The natural result is that because of this waste of motive power, the whole transportation system of the northwest is suffering something which approaches a complete breakdown. Transportation facilities are lacking for the movement of everything.

#### FARMERS BURNING CORN

Because they cannot afford to sell the corn at the prices offered in New York—because freight rates are too high—the farmers are burning their corn for fuel. Because they cannot get transportation to carry their wheat to market, the northwestern wheat is rotting on the farm. Because the wheat is not moving, the price of food products in the east is so high that labor is demanding a continuance of war wages. Because we are still having to pay war wages business generally is in the doldrums with a period of recovery decidedly uncertain. All of this goes back to an extremely faulty handling of our northwestern transportation facilities. The cost of labor at the mines—made high by the high cost of food and unionism—is making the price of coal high for the railroads. The high wages paid to the coal miner is compelling the railroad to pay high wages to its own employees. The high wages and the high cost of coal compel the railroads to charge high rates. The high rates are killing the traffic of the railways by discouraging the business men.

Nevertheless, business has to go ahead regardless of the transportation embargo because the people of the United States must do business in order to live. As business tries to proceed upon any such

basis as this, it must charge high prices and, of course, the profit must be commensurate with the risk. That makes the earning capacity of money invested in ordinary industry considerably higher than the so-called "legal rate" which the railroads are allowed to earn on their securities. When business easily makes 8 percent to 10 percent on its money, the business man is not going to lend money to a railroad at 5½ percent. This means that business gets all of the money and that the railroad is financially starved. Without money the carriers cannot expand in the way they should to cope with the growing traffic of the country. They try to put up their rates so they can earn the money which they cannot borrow. As they advance the rates they put a further embargo on the traffic of the country and make it still further impossible for the farmer in the northwest to pay the charges and still get anything at all for his grain f. o. b. the farm.

#### A COMPLEX SYSTEM

Dr. Garfield, when he was United States Fuel Administrator, thought he was doing an extremely simple thing when he put into effect the zoning system which took one kind of coal out of the northwest and put another kind of coal in its place. Instead of doing a simple thing, he set in motion one of the most complex transportation systems that we have ever had to cope with; as a result of that complexity the whole northwest is facing consequences from which it will not recover for years, if indeed it ever does recover. I tell this story of one market that we may learn one lesson—the tremendous consequences which can follow the least tampering with business adjustments. I have not overdrawn this picture. I have just been over the ground. I have seen it all with my own eyes and I have measured consequences on figures supported by tales of human experience. This situation challenges the thought of the nation.

The essence of the proposition is: The railroads have developed a case of exaggerated inadequacy, due to many causes. They are not quite able to carry our commerce. They must have such assistance as can be afforded by auxiliary carriers or our commerce must suffer a check. Those auxiliary carriers which are ready to function must be allowed to operate without restraint or restrictions. If their success and efficiency depends—as it does in this case—upon loads for the vessels being available in both directions, then anything which tends to prevent that loading is contrary to good public policy. That is, it tends to destroy the efficiency of the auxiliary carriers which are most relied upon to relieve the rail carriers.





## STEADY ACTION ON WAR MINERALS CASES

*Many Claims Settled Under Impetus of Amended Bill—Awards Total Approximately One-Third of the Aggregate Sought in Claims—Commission's Unexpended Funds Now Stand at Three Million Dollars*

**W**AR MINERALS relief cases have been made the subjects of steady and continued action under the provisions of the amended act which liberalized administration in the making of awards. This is indicated by the annual report of the War Minerals Relief Commission submitted to Congress December 4 by the Secretary of the Interior.

This report shows that the commission has made recommendations in 310 cases since the amendment went into effect. These claims, involving a total of \$6,447,567, may be divided into the following classes:

Cases upon which Secretary Fall has taken action, numbering 244, with awards totaling \$1,671,971 made on claims with an aggregate of \$6,447,567.

Cases acted upon by the commission and now pending the Secretary's action: These number 15, and carry recommendations for award of \$41,367 on claims for \$893,942.

Cases numbering 51, which have been acted upon by the commission and are being held for acceptance or appeal before being forwarded to the Secretary's office; these involve claims of \$436,409, on which recommendations for awards totaling \$14,346 have been made.

An analysis of the administration of the war minerals relief act since its amplification through amendment offers interesting data for a comparison of the ratio of awards to claims. Under the law as it stood before amendment, the total paid out by the commission amounted to practically 30 percent of the amount asked for in the claims upon which action was taken. Officials of the commission who have been studying the figures entering into the report submitted to Congress point out that under the amended act the awards have totaled approximately 33 percent of the amounts asked in claims which have been handled. The two percentages are practically identical, and this development is interesting in view of the fact that the amended act plainly liberalized administration of its provisions and the natural supposition would follow that an appreciable increase in amounts paid to claimants would be the result.

Officials explain the situation by calling attention to the fact that many awards made since the act was amended simply relate to the same cases previously acted upon, the additional awards merely covering stimulation or other

foundations for claims extending back of the period taken into consideration when the original awards were made.

A close study of the remaining claims, resulting in a more or less accurate approximation of the total likely to be formed by their awards as indicated by averages made to date, shows that the funds held by the commission probably will provide close to the amount needed to satisfy the claims. At present, the commission has approximately \$3,000,000 to its credit, with claims yet to be acted upon totaling approximately \$9,000,000. This indicates that if the prevailing percentage in the neighborhood of 30 percent continues to stand as the ratio of awards to claims, the funds will be exhausted at about the same time that the last case is closed.

In any event, it is certain that the commission will clean its slate by acting upon all cases as provided by the law. Should its funds be exhausted before all awards are made, those awards which stand within the margin of funds on hand and payments authorized by the commission will be provided for through the passing of a deficiency appropriation by Congress, it is indicated.

Examinations by engineers in connection with some of the larger claims on the Pacific coast that were not covered before the snows prevented further work will be made as soon as weather conditions permit.

### LIST OF AWARDS

The following awards have been recently approved by Secretary Fall:

A. H. Metzger and W. M. Blevins, Unicoi, Ten., \$699.20; Tri-State Chrome Co., Spokane, Wash., \$9,086.19; F. M. Doak, San Francisco, Cal., additional award of \$2,377.79; Carl Olsen & Oluf Olsen, Washington, Cal., \$727.22; R. E. Noble, W. G. Hemphill & D. J. Sullivan, Roseville, Cal., \$502.77; C. J. Shank, Edgewood, Cal., \$1,813.44; Owen Byrnes & Thomas Danaher, Helena, Mont., \$2,070.23; Ralph S. Bennett, Grants Pass, Ore., \$426.70.

G. C. Irwin, Ashland, Ore., \$246.28; Daniel McLeod, Kerby, Ore., \$437; G. A. Fitzpatrick, Holland, Ore., \$252; S. B. Potter, Takilma, Ore., \$2,855; William E. Davis, Bisbee, Ariz., \$1,128.25; William H. Monroe, Coloma, Cal., \$425.55; Mike Hurley, Livermore, Cal., \$213.75; C. C. Doran, Ocean Park, Cal., \$250; John F. Temple, Pendleton, Ore., \$741.

The following awards have not yet been acted upon by the secretary:

H. W. Guinan, El Dorado, Cal., \$626; John B. Matthews, Santa Cruz, Cal., \$719; Albert B. Puth, Holland, Ore., \$144; Jeldness, Gustins & Frey, Medford, Ore., \$401; Jeldness & Tainor, Medford, Ore., \$214.30; N. W. Atkinson, Melrose, Mont., \$1,404.05; Edwin George & Lee George, Gillette, Wyo., and Salem, Ore., \$974; Seattle (B. C.) Silver Lead Mining Co., Seattle, Wash., \$7,485.28; W. B. McKenney & A. B. Leonard, Lotus, Cal., \$1,273.90; J. A. Gillis, Tuttletown, Cal., \$109.84.

Joseph A. Pratt, Tuttletown, Cal., \$109.84; E. D. Hendricks, Yankee Hill, Cal., \$260; Iron Clad Leasing Co., Butte, Mont., \$3,891.93; Robert Raftice, Joy, Nev., \$1,250; Wanderer Mining Co., San Rafael, Cal., \$2,360.50; Jas. J. Cummings & Son, San Francisco, Cal., \$2,122.40; W. C. Meler, Santa Margarita, Cal., \$940.85; Alma Davis, Prairie City, Ore., \$1,117.93; Wells & Pollock, Yankee Hill, Cal., \$441; J. A. Mills, Etna Mills, Cal., \$280; Joseph Delume, David Pease & Thomas Moran, Iowa Hill, Cal., \$421.50; William Hunter & G. A. Wilson, Ft. Jones, Cal., \$197; Dave Vanella, Nassau, Cal., \$250.

### LIST OF DISALLOWANCES

Recommendations for disallowance have been made in the following cases:

Doak & Haw, San Francisco, Cal., no net loss; Grebenc & Fitzgerald, Valmy, Nev., not of commercial importance; Logan Rives, Los Angeles, Cal., claim for purchase of property; Aguilera y Compania, Santiago de Cuba, Cuba, a foreign corporation and therefore not within the act; W. W. Coy, Geo. C. Cottrell, Phil Emery, Geo. E. Smith and W. R. Miller, Powers, Ore., no attempt made to produce; Shirley Mining Co., Covington, Ken., losses not due to expeditious operation of properties; Timothy Pearson, San Francisco, Cal., no net loss; Gem Mining Co., Spokane, Wash., claim not of commercial importance.

R. Kemp Welch, Talent, Ore., claim for purchase of lease; Welch & Horr, Talent, Ore., no net loss; J. S. Shepherd, Leadville, Colo., no additional award; Huntington & Brockway, Kernan, Cal., claim for debt to an ore-purchasing company, which company was indebted to others, to whom reimbursements have been made by the government; P. J. Sullivan, Watkins, Ore., claimant merely prospecting.

# STATE EXTRAVAGANCES OFFSET FEDERAL ECONOMIES

*Vast Expenditures by State and Local Governments Burden Industry—Mining Companies Handicapped—Corporate Enterprises Generally Discriminated Against—Easy Market for Tax-free Securities a Controlling Factor*

By MCK. W. KRIEGH

THE POLITICAL aspirations and personal ambitions of individuals connected with the thousands of state, county and municipal governments mainly are responsible for the increasing sweep of public extravagance which is surging across the country. Utterly oblivious of the effect of scattering the public moneys to the four winds, these governments, through the acts of the individuals in whom their administration is placed, are burning the candle at both ends by laying an oppressive burden of taxes upon industry and at the same time and by that same act reducing the ability of industry to pay the increased levies because of the reduced prosperity involved.

## COURSE OF DISCRIMINATION

Were the costs of these extravagances leveled against the entire industrial framework of the nation by these smaller branches of government, the results would not be of so injurious an order as that to which they now belong. It is certain that if all phases of industrial activity felt these increased burdens pressing upon them with equal weight, the reaction would long ago have grown to such a degree as to call a halt in the flagrant spending of the public's money. With the state, county and municipal authorities bent upon raising the largest amount of funds with the least complaint, it is only natural that they should choose those industries whose influence they feel the least as the butt of their activities.

Thus, it happens that an agricultural community, in which mining is found to some degree, will spend money beyond a sensible and sound limit, all because the portion of the mining industry within its borders must "stand for it." Were these same rates and methods of taxation to be levied upon the industries of greater voting influence in these political subdivisions of the government, those seeking to plaster the additional tax levies would soon find their political heads lying on the platter of defeat.

It is interesting to note the trend of state and local fiscal affairs. Indebtedness of states, counties and municipalities soared from

3.8 billion dollars in 1913 to 9.2 billion dollars in 1921, according to the best statistics available. State, county and municipal revenue receipts, principally from taxes, increased from 1.9 billions in 1913 to approximately 3 billions in 1921.

State and local taxes on mining corporations were boosted from 50.6 millions in 1918 to 86.6 millions in 1920. Manufacturing corporations were taxed locally 312 millions in 1918 and 439 millions in 1920. Transportation companies paid locally 94 millions in 1918 and 250 millions in 1920. Financial and banking corporations were taxed locally 187 millions in 1918 and 227 millions in 1920. These figures do not take into account the taxes paid by investors, stockholders and others interested in or dependent upon these enterprises.

## WHERE BURDEN RESTS

The mining and transportation industries, among others of lesser importance, have borne the heaviest proportionate increases in state and local taxes during the period of depression following the war, with manufacturing a close third, and banking or finance fourth. The conclusion might logically be reached that this situation has an important bearing upon the non-operation of low-grade mining properties, which otherwise might be profitable, the high prices necessary to sustain manufacturing, the excessive freight rates imposed and permitted under the Transportation Act, and the abnormal interest rates on borrowed capital.

The mining industry suffers not only from high tax burdens, but also from high freight charges which prevent free

movement of traffic, and high interest rates on capital. The extent to which increasing state and local taxes affect these factors in mining operations is largely a matter of conjecture, but the figures given reflect conditions to a degree which cannot be ignored.

Mining corporations paid in income and profits taxes to the federal government in 1918, 191.3 million dollars, and in 1920, 174.5 million dollars, according to statistics issued by the Treasury Department. The aggregate amount of taxes paid, including federal, state and local, was 241.9 millions in 1918, and 261.1 millions in 1920.

## SAVINGS ARE MINIMIZED

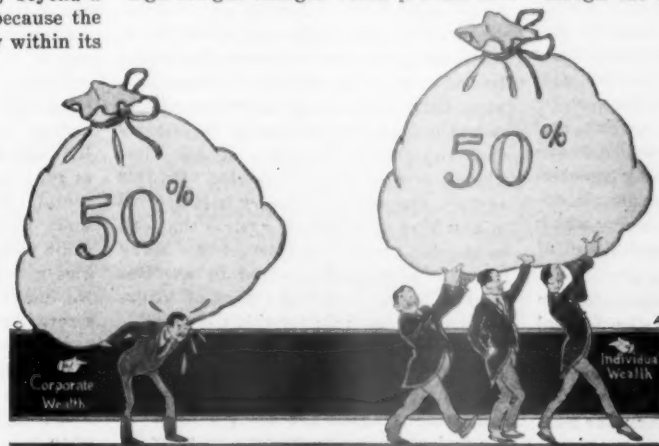
The reduction in federal taxes was more than offset by the increase in state and local taxes, and the industry, although passing through a period of depression, suffered a material increase in its total tax liability. Allow for changes which have been or may be made by the Treasury Department in the adjustment of returns for these years, and the statistics would show even a greater burden upon mining.

W. R. Ingalls, in his book on "The Wealth and Income of the American People," inventoried the national wealth at the end of 1920 at 273 billion dollars, out of which the mines were estimated at 3 1/4 billion dollars, or about 1.2 percent of the total national wealth.

In his address before the conference on mine taxation, held at Cleveland in conjunction with the 25th annual convention of the American Mining Congress, Dr. Ingalls pointed out that, although the mining industry is of major

importance, and although raw mineral products constitute more than 50 percent of the total tonnage of railway traffic, nevertheless the value of all the mines and metallurgical works is but a trifling percentage of the value of the aggregated national wealth, and, furthermore, the mining industry employs but one million out of the 42 million workers of the country.

Of the total taxes paid by corporate enterprises to state and local govern-



ments in 1920, amounting to \$1,198,432,199, mining corporations paid 7.1 percent. Of the total corporate income and excess profits taxes paid to the federal government in 1920, amounting to \$1,625,234,643, mining companies paid 10.7 percent. If the same ratios prevail in the case of taxes paid by individuals interested in mining, the mining industry is paying vastly more than its share of taxes in comparison with the ratio of mineral wealth to the total national wealth.

#### TOTAL OF CORPORATE WEALTH

The total value of corporate investments and holdings is said to be 68 billion dollars. This is 25 percent of the total national wealth as estimated by Dr. Ingalls—undoubtedly a very conservative estimate. State and local taxes in 1920 aggregated at least 3 billion dollars, of which corporate enterprises paid approximately 40 percent. Federal income and profits taxes amounted to 2.7 billion, out of which corporate enterprises paid over 59 percent. These figures indicate that, although corporate wealth constitutes but 25 percent of the total national wealth, corporate enterprises are bearing nearly 50 percent of the major tax burdens. This should refute those contentions of radical propagandists that corporations are escaping taxation.

If the debt-incurring, tax-levying, money-spending agencies of state and local governments continue to issue tax-exempt bonds, exact discriminatory tax levies, and dissipate public funds without restraint and without regard for the welfare of the industry or class discriminated against, an economic and political upheaval is certain to result. The hazard is great and the nation should be aroused before it is too late to apply a remedy.

#### THE PREVAILING TENDENCY

The tendency to pile up the public debt by issuing taxfree bonds to finance every sort of public enterprise, simply because an easy market is found for this class of securities, is fundamentally wrong. The tendency to broaden governmental functions to embrace new activities, resulting in the creation and maintenance of new boards, commissions, and other tax-consuming agencies to carry out these experiments, is opposed to the principles of economy which should govern in the expenditure of public funds.

There has been a noticeable reduction in the annual expenses of the federal government since the war; but these expenses must, of necessity, remain for the next quarter of a century at an amount nearly four times greater than the pre-war level. Fixed obligations, such as

interest on the public debt, compensation and other benefits to disabled soldiers, and salaries of the large personnel necessary to the effective administration of governmental business, must be met.

As the affairs of the national government become stabilized, income taxation at the present rates will not impose a serious hardship on business generally, although it is believed that a further re-

duction of the surtax rates on individual incomes would have a stimulating effect.

The real menace, however, to national prosperity lies in the unrestrained tendencies of state and local governments toward extravagance in public expenditures and discriminatory taxation of particular industries to pay for this extravagance.

## RADIO TESTED FOR USE IN MINES

*Bureau of Mines Officials See Probability That Wireless May Be Made a Vital Factor In Mine Rescue Work—Other Practical Uses Foreseen—Only Preliminary Studies Made*

TESTS conducted at the experimental coal mine of the Bureau of Mines at Bruceton, Pa., hold out the hope that wireless waves may be used in the future as a means of effective communications between rescuers on the surface and miners entombed in mines following fires and explosions. These preliminary experiments of the Bureau of Mines, made in cooperation with the Westinghouse Electric and Manufacturing Company, while failing to develop any practical method of using wireless waves for underground communication, nevertheless indicate clearly that electromagnetic waves may be made to travel through solid strata. In the Bruceton experiments, signals were heard distinctly through fifty feet of coal strata, although the audibility fell off rapidly as this distance was increased. The absorption or loss of intensity with distance is very great for the short wave lengths used in these tests.

Longer wave lengths are known to suffer less absorption and may possibly be found practically effective under certain conditions.

The mine telephone has been perfected to such an extent that it is giving satisfaction in most mines where the wiring is well insulated. Very often the telephone cannot be depended upon on account of falls of rock, grounding due to worn insulation or extreme dampness. In the event of a disaster it frequently happens that the mine telephone system is put out of commission by the agency that causes the disaster, at the time when it is most urgently needed. On this account, the mining industry is interested in any kind of telephone system that can be counted upon in an emergency. Many requests have been received by the Bureau of Mines to devise means of utilizing wireless methods for this purpose.

The preliminary experiments consisted first in receiving signals from without the mine by means of a receiver located inside the mine, and, second, both sending and receiving messages underground

through the strata. It was found that with a receiving instrument set at a point 100 feet underground, signals from KDKA station, East Pittsburgh, Pa., could be heard distinctly. Station KDKA is at a distance of about 18 miles from the experimental mine. About 50 feet from the receiving station used in this test was a 6-inch borehole from the surface, lined with iron pipe and containing electric light wires which extended therefrom throughout the mine. The presence of these wires evidently assisted greatly in the reception, for, when the receiving set was carried to another point in the mine removed from wires and tracks, the signals were barely audible through 50 feet of cover. The fact that signals were detected, however, even though faintly, is sufficient evidence of transmission through the ground to encourage further experimenting.

#### TRANSMITTING CONDITIONS STUDIED

In sending waves underground, a transmitter was used in such a manner as to send out continuous waves of 200 to 300 meters' length. On account of the limited time at disposal, no attempt was made to modify the apparatus in such a manner as to produce waves of greater length. Such additional experiments are much to be desired. In all experiments the vertical antennae was found to give the better results. The horizontal antennae gave practically no reception. A loop of a single turn was used with fair results. All these experiments were tried with a wave length of 200 to 300 meters, except the reception from KDKA which was 360 meters. The strata at the experimental mine lie almost horizontal. The direction of strata may have some influence on the transmission of radio waves, but the present experiments give no conclusive evidence on this point. No doubt the degree of wetness of the strata influences the transmission of radio waves. The experimental mine is a comparatively dry mine, but the overburden is damp and a small stream of water is continually flowing from the mine.



# POWER COMMISSION GAINS FREEDOM FOR ACTION

*Western Application Involving 10,000,000 Horsepower Are Ushered Toward Consideration As Agreements On Columbia and Colorado Rivers Are Reached—Treaty Between States On The Colorado*

**T**HE FEDERAL POWER Commission soon will enter upon direct activities in connection with proposed power developments along the Columbia and Colorado rivers involving approximately 10,000,000 horsepower, vast portions of which will be used by the mining industry throughout the era during which availability of cheap power will hold an increasingly vital concern for the industry.

In the case of the Columbia River the commission has received a report from the special board it appointed to determine the relation between water power, irrigation and navigation upon that stream. With this report in its hands the commission now is able to proceed in cases where power applications involving the waters of the Columbia have been made. Action in these cases has been suspended until the report could furnish the necessary light upon the economic and physical phases concerned in the development of the Columbia's resources.

## NOW READY TO PROCEED

Action on the Colorado River applications before the commission has been awaiting the findings of the Colorado River Commission, an organization authorized by Congress for the purpose of negotiating between the states within the Colorado basin a compact in accordance with which the waters of the river may be apportioned among these states. The principles of this agreement were decided upon last month at the sessions held by the Colorado River Commission in Santa Fe, N. Mex. Until an agreement of this type was reached the Federal Government could not take free action in connection with disposition of power applications involving the use of the water in this stream and the various state governments naturally overlapped in their desires to utilize the potential resources of the river.

Realization of the agreement between the various states interested in the waters of the Colorado brings action by the Federal Power Commission one step closer to the Girand case which involves

development of electrical energy for use in mines of the Southwest.

## CASE WAS BEFORE MEETING

The details of this case were before the sessions of the conference at Santa Fe, but it is not believed that this fact held the importance for this development that it will gain from the treaty under

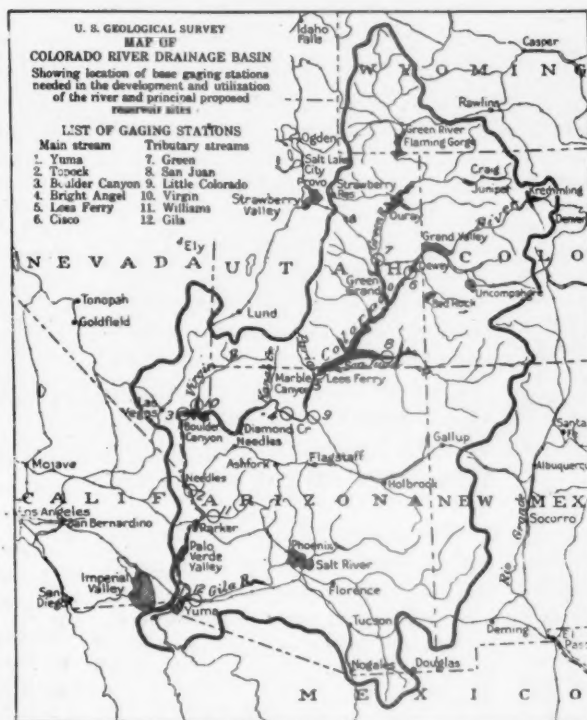
Utah and Wyoming. A preliminary announcement of the agreement showed that in general provision is made for a division of the basin into two groups of states embracing Utah, Colorado, Wyoming and New Mexico in the upper division and Arizona, Nevada and California in the lower division.

Herbert Hoover, Secretary of Commerce, elected chairman of the Colorado River Commission at its first meeting in Washington, held last January 26, stated that "The commission feels gratified at the successful issue of the unique conference for a treaty between such a large number of states, substituting this method under the Constitution for an indefinitely prolonged contesting litigation and arresting developments in the Colorado River Basin which would otherwise have followed."

Unquestionably any agreement as to division of the waters of the Colorado River that will permit a general development in all branches of industry throughout the territory tributary to the stream will result in ultimate cheaper power for use in mining in the several states. This economic benefit, however, must of necessity come in other than the immediate future, taking its place after the more direct benefit offered through the opening of applications for immediate action by the power commission.

First consideration in connection with distribution of the rights to the Colorado River stands with agricultural development and this precedence of attention to reclamation projects might, on the surface, indicate relegation of the mining industry's interests to a less prominent position. It is evident, however, that any storing of water for irrigation must of necessity contribute to development of power for the use of mining.

A review of the work of the Federal Power Commission during the two years of its operation clearly indicates the practical value of the Federal Water Power Act and the task now confronting the commission. Due to the many years' delay in securing adequate Federal legislation it was but natural that a flood of applications should have followed im-



which the several states now will cease to look askance upon developments within the borders of their neighbors.

While the commission has delayed action upon the Girand case to some degree because of the necessity of making technical investigations, it is understood, the main reason for postponement rested in a desire to have the treaty among the states effected before additional steps were taken in this case, which is based upon applications made several years ago.

Unless unforeseen developments present themselves, it is expected that the commission will in the near future concern itself directly with this case.

The states represented in the Colorado River agreement were Arizona, California, Colorado, Nevada, New Mexico,

mediately upon approval of the act. Nevertheless, during its second year there have been filed with the commission applications aggregating a net total of 5,000,000 horsepower of proposed installation. This amount, added to the applications of the preceding fiscal year, makes a grand total of 327, involving in excess of 21,000,000 horsepower. This amount is more than twice the existing water power installation of the United States, and more than six times the aggregate of all applications for power sites under Federal control in the preceding 20 years.

#### ACTION ON MANY CLAIMS

By confining its activities primarily to applications for power projects, declarations of intentions, and requests for restoration to entry the commission has been able to take final action on more than half of the applications filed during the two years. While there have been delays in arriving at decisions, the majority of these delays are charged by the commission to the infeasibility of the projects for which applications have been made, to the lack of financial ability or experience of applicants, or to conflicts in interests which in many cases have been serious and have required long and careful investigation and study before decision could be rendered.

Up to June 30, 1922, the commission had authorized 58 preliminary permits and 49 licenses, of which 18 were for transmission lines. The 58 permits now outstanding involve an estimated installation of 2,405,975 horsepower and the 31 licenses for power projects 1,945,245 horsepower, or a total of 4,351,220 horsepower. Of the projects covered by the 31 licenses, 27, involving an estimated installation when completed or 1,951,800 horsepower, were either completed or under construction at the close of the fiscal year.

#### NAVIGABLE WATERS

On June 24, 1922, the State of New York filed a bill in the Supreme Court of the United States asking that the commission be enjoined from enforcing within the State of New York certain provisions of the Federal Water Power Act, alleged to be in excess of the constitutional authority of the United States, or any interpretation thereof which would trespass upon the rights of the State. The matter has been set for argument January 2, 1923.

Of equal importance and perhaps of greater danger are the indirect attacks on the act, according to officials of the commission, who have issued a formal statement reading in part as follows:

"There are movements on foot in several quarters to secure for certain sites or streams special legislation, which if approved would constitute a partial re-

peal of the Federal Water Power Act, and would eventually result in the progressive disintegration of our present national water-power policy. If these proposals that rights or authorities be granted independently of the present law be examined, it will be found that some or all of the essential features of the act, particularly those that protect the public interest, have been omitted, even when provisions in direct conflict have not been substituted. Furthermore, the granting of special privileges to favored interests would clearly discriminate against those who, in the faith that Congress had at last fixed its policy, are investing hundreds of millions of dollars under the obligations of the act.

#### RESULTS ARE CITED

"The results already accomplished afford convincing evidence that grants of special privileges are not necessary in order to secure the development of all the electric energy that the market can absorb. Congress made no mistake in its declaration of policy in the act of 1920, but it would be a serious mistake to permit that policy to be essentially modified. The proposals for special legislation are primarily attempts to circumvent the present law. If successful, they would be dangerous not only in themselves but as precedents for similar action in the future.

"Having spent 10 years in discussing and developing a national water-power policy and having written such a policy into legislation, it would be most unwise, even though the act were not successful, to permit the law or the policy which it expresses to be essentially modified, except after fair trial and convincing evidence of the desirability of change. To proceed to modify it directly or indirectly when it is proving to be a distinct success would be folly. In any case modifications should come as a change in the general law after due consideration by Congress and not as special legislation applicable to a particular site."

Due to a lack of personnel it is stated by officials that "the commission has been obliged to delay action on many important projects, and it has been forced to omit altogether the performance of important duties required by the act. This is particularly true of valuations, of which cases involving approximately \$100,000,000 are now awaiting action."

### MINE FIRE PREVENTION IS AIM OF CODE

**M**INE FIRE prevention recommendations made by a committee at the Cleveland convention of the American Mining Congress in response to a request by the California State Industrial Accident Commission are to be molded into the form of rules as a part of the code of mine safety orders of the commission. This action is to be taken following a public hearing to be held by the commission December 7.

The rules prepared by the Mining Congress committee were presented by Edwin Higgins, chairman of the body, at the meeting of a mixed committee held in San Francisco during the week beginning November 7. The committee to which the report was submitted consisted of miners, operators and representatives of the United States Bureau of Mines, California Industrial Accident Commission and California Metal and Mineral Producers Association.

After some discussion of rules and suggestions made by various individuals and organizations, the rules suggested by the Mining Congress were adopted as a basis. They were voted upon by section and went through with very little revision. The work was laborious and was largely handled by a sub-committee.

### COAL MINE FATALITY RATE DROPS

**D**URING THE NINE-MONTH period, January to September, of the current year, 1,186 men have been killed by accidents at coal mines, as compared with 1,485 killed in the corresponding months last year. The fatality rate per million tons is 3.98 this year as against 4.07 for the first nine months of 1921. Because of the general strike recently closed, the output of coal in 1922 has reached only 298,000,000 tons, while during the nine-month period last year the production was 365,000,000 tons.

Fatalities due to falls of roof and coal in 1922 show no change from last year's nine-month record in the number of men killed per million tons of coal mined; the fatality rate for explosives has been reduced 45 percent. The rate for gas and dust explosions has doubled, but it should be stated that explosions in 1921 resulted in an unusually small loss of life, constituting only 1.7 percent of the deaths from all causes combined. Only slight increases are noted in the fatality rates charged to electricity and haulage accidents.

# TARIFF REVISION INVOLVES UNPRECEDENTED TASK

*Commission Faces Enormous Amount of Work in Handling Proposals for Amendment—Applications for Revision Probably Will Reach All Portions of the Act—Prosperity of Mining Industry Involved*

**T**HE UNPRECEDENTED machinery necessary to handle the new type of governmental business set up by the flexible provisions of the tariff act is being assembled by the United States Tariff Commission. It is expected that hearings will soon begin on a number of the 72 applications for reconsideration of items in the tariff schedule and that within a few months applications covering items in every schedule will be under consideration by the commission.

The decisions of the commission which will result in recommendations to the President will thereafter become immediately effective by proclamation. No further legislative process is necessary.

The prosperity of the mining industry is thoroughly tied up in the working out of the present tariff law, not only because of protection afforded to direct products of mining but also the effect on the continuance of businesses to which the mining industry furnishes raw materials.

## MODE OF APPLICATION

The commission has provided that an application must be made in writing and causes set up wherefore changes should be made. Investigation of the application itself will be made and the commission will determine whether or not the facts set forth on the application justify an investigation. Each commissioner will have under his personal direction rather a large scope of the tariff law subdivisions, being similar to those which have been arrived at by the Interstate Commerce Commission. The general staff will be divided into the legal division, chief economist, chief investigator, and secretary.

An application will first be referred to the technical chief in charge of the particular commodity set up in the application, who will prepare a preliminary report which will be gone over in conference with the chief investigator, the legal chief, and the chief in charge of economies. This conference will determine whether an investigation will proceed upon the application. Should the investigation then be ordered the commission

will issue notice thereof. Anyone showing legitimate interest in the investigation may appear as witness without summons. The commission may order an investigation on its own initiative even though application has not been filed therefor. The commission may summon any witnesses and any records or books



of witnesses bearing on costs of production here and abroad.

The commission is not limited in its investigation to the issues set up in the application but may expand its scope as it may see fit. In the event of failure of a witness summoned by the commission to appear or in the event of failure of a witness to furnish pertinent information as set forth above the commission may, if necessary, appeal to the United States Court for summons. Applications may be filed either by producers with reference to commodities which they produce or by consumers with reference to articles which they consume. Applications may be filed either for the raising or lowering of a rate of duty provided in the present tariff law to the extent of 50 percentum of the rate so provided. Application may be made for the levying of ad valorem duties on imports on the basis of American valuation on a showing that the total amount additional to be provided as above is not sufficient to offset the difference between the cost of production here and abroad.

## VARYING OPINIONS PREVAIL

Widely varying opinions prevail as to the probable volume of proceedings be-

fore the commission. It is certain that the commission is planning to largely increase the staff and scope of its work in order to take care of applications which have been filed and are expected. It is also entirely probable that under this provision that there might be a continuous tariff revision which will supersede tariff legislation except at infrequent intervals.

With particular reference to metals, an extension of the metals division is expected. Paul M. Tyler, who has had metals investigation under his charge, will be head of this division and will have the assistance of at least six experts. The entire scope of schedule 3, the metals schedule, will be subdivided into iron and steel, non-ferrous metals, machinery, heavy hardware, cutlery and miscellaneous.

Other division chiefs will be at the head of a bureau for each of the other schedules under which non-metallic minerals are classified and each of these divisions will work under the general direction of a particular member of the commission as outlined above.

## REGULATIONS ISSUED FOR CHINA TRADE

**T**HE DEPARTMENT of Commerce has issued regulations for the organization of American companies to trade in China, under the act recently passed by Congress. The act places American trade in China on an equality with that of England, France and Japan. The corporations must be organized under the laws of the District of Columbia and application for their registration must be made to the Department of Commerce.

Acting Commercial Attaché Frank Rhea, at Peking, has been designated Registrar under the act, and F. R. Eldridge, chief of the Far Eastern Division of the Department of Commerce, assistant registrar.

The application, in addition to other data, must show the extent the corporation will aid in development of markets in China for goods produced in the United States. Certificate fees required by the act must accompany applications.



# TRANSPORTATION WILL NOT BEAR TAMPERING

*Delicate Situation and History of Recent Past Stand as Warnings Against Any But Farsighted Action—Stifled Initiative Breeds Difficulties—Facilities Are Shown To Be Inadequate*

**R**AILROAD TRANSPORTATION requirements of the country are increasing more rapidly than railroad facilities. The increase in car supply and locomotive equipment has not kept pace with the normal growth of the nation's business. Car shortages have been growing more and more acute as periods of industrial prosperity are encountered. Construction of new lines has dwindled until, during the past five years, more mileage has been abandoned than built.

## DAWN OF PROSPEROUS ERA

A prosperous era has dawned, with the railroads unable to meet the demands made upon them by shippers. The shopmen's strike aggravated the situation. The coal strike had a depressing effect. But if there had been no coal strike or shopmen's strike, a bad condition of affairs would have developed just the same, due to the fact, as stated by Charles H. Markham, president of the Illinois Central, in a recent address, that, "while the production and commerce of the country has grown rapidly in the last 15 years, the development of railway facilities has steadily and rapidly declined."

There is, at the present time, no reserve of empty cars in any district or upon any road in the country. The railroad executives have been endeavoring to speed up the return of equipment from connecting lines. The car service division of the Interstate Commerce Commission has pursued the matter steadily in the hope of affording relief to the districts most seriously affected; but both railway executives and the Commission have discovered that the condition hinges upon causes which cannot be overcome in a short time.

## A SIGNIFICANT DECLINE

Perhaps it is more than a coincidence that the period of decline since 1906 in railroad expansion corresponds with the period of government regulation of railroad rates, rules and practices. However, government regulation has been accepted as a permanent policy and will continue. The future progress of railroad development and efficiency will depend largely upon the manner in which the Transportation Act is administered. The railroads must be developed for the country, and the energies of both railway executives and government officials should be directed to that end. It may be found that great waste can be eliminated by the location of manufacturing and distributing centers nearer the

sources of the raw materials, so that present facilities could be made to handle the volume of traffic more readily.

During October the loading of revenue freight reached a peak; 1,014,480 cars were loaded during the week ended October 28. This was the largest number loaded during any one week in the history of the railroads, except for the week of October 15, 1920, which exceeded this total by only 4,059 cars, or two-fifths of one percent. An analysis of the car loadings by districts and commodities shows that there is a more widespread stimulation in business now than two years ago.

## LOADINGS SHOW INCREASES

Coal, coke and ore loadings are steadily increasing although the shortage of cars is still acute. The demand for freight cars is far in excess of the current supply. New cars are being placed in service as rapidly as they can be delivered. Large orders for coal cars and locomotives have been placed with the manufacturers. Efforts are being made to reduce the number of bad order cars to the minimum, and large gains have been made in this direction.

Pertinent to the present shortage of coal cars in southern roads, the car service division of the American Railway Association recently issued specific orders to several lines north of the Ohio River to deliver 4,000 empty coal cars to the Louisville & Nashville Railroad within a ten-day period beginning November 13. These orders were complied with, and thus the Interstate Commerce Commission was saved the necessity of issuing service orders compelling the carriers to perform on the orders.

The railroads of the country have passed through four periods in their development to present stages—periods of construction, restriction, Federal control and reaction. During the construction period vast territories and resources were opened up and remarkable development took place. Beginning with the enactment of the Interstate Commerce Act, a restrictive policy was pursued by the government, and the record is clear that new construction practically ceased and efficiency of service began to decline. The period of Federal control, beginning in 1918 and ending in 1920, was marked by costly experiments and a lamentable deterioration of the roads and their equipment. The present period, beginning with the adoption of the Transportation Act, February 28, 1920,

may be termed a period of reaction, marked by wage controversies, bitter attacks upon the Transportation Act, vigorous efforts to secure rate reductions, and increasing agitation for government operation.

## CAUTION IS NEEDED

Caution should be exercised in any further attempts, by legislation, to improve the transportation situation. The Transportation Act should be given a fair trial. The solution of the problem may lie in a hands-off policy, leaving to the carriers' initiative to meet the demands which have been straining their resources to the limit. A breathing spell, without experimental interference, may bring about needed improvements in service and additions to trackage and equipment. A restrictive policy may have the effect of destroying initiative and creating uncertainty which will result in continued difficulties.

## SUPREME COURT ACTS ON MINING CASES

**T**HE SUPREME COURT has heard arguments on the constitutionality of Pennsylvania laws imposing a tax on anthracite coal and forbidding anthracite mining which affects surface structures. The laws were defended by Pennsylvania state officials and were resisted by representatives of the anthracite coal industry on the ground that they violated the right of contract and sought to take property without due process of law. The tax law also was opposed by representatives of various eastern states, including New York, New Jersey, Massachusetts, Maine, New Hampshire, Vermont, Rhode Island, Connecticut and Delaware, on the ground that the tax is a levy on imports, as 80 percent of Pennsylvania anthracite was shipped out of the State. It was pointed out that the tax is a burden on coal consumers.

Recent action by the Supreme Court in cases involving mining interests includes the following:

Declination to rehear the suit of the Altitude Oil Co. vs. Colorado.

Grant of the application of the Pierce Oil Corporation to continue in force the temporary injunction against the Arkansas law imposing a tax on gasoline and kerosene in that state.

Decision to review the findings of the lower court in the suit of the Pennsylvania Railroad against the authority of the Railroad Labor Board in handling labor disputes.



THE MILWAUKEE AUDITORIUM

## MINING CONVENTION IN MILWAUKEE NEXT YEAR

*American Mining Congress To Hold Twenty-sixth Annual Meeting and Exposition During Week of September 24-29—Convention City Is Ideally Located and Offers Large and Well Adopted Auditorium*

**T**HE TWENTY-SIXTH Annual Convention and Exposition of Mines and Mine Equipment of the American Mining Congress will be held in Milwaukee, Wis., during the week of September 24-29, 1923.

Milwaukee has the advantage of having a large, complete auditorium capable of housing effectively both the exposition and the convention. In fact, from the convention standpoint, the Milwaukee auditorium is even better adapted for handling such an important national meeting than the Cleveland auditorium, for, in addition to the splendid setting for the exposition itself, it has a large number of convention halls seating from 300 to 1,100, thereby making it possible to give each of the separate Divisions of the American Mining Congress an adequate well-equipped meeting place.

This feature will be especially pleasing to the convention delegates, for it will eliminate any inconvenience which might result from the necessity of placing different sessions of the convention in rooms which were not really designed for such purposes.

### LOCATION IS IDEAL

Milwaukee is a natural meeting place for mining men. There is probably no other city in the United States which is a larger producer of important types of mine equipment and mine machinery, and mining men from all parts of the United States have for years been coming to Milwaukee in order to inspect and purchase different types of mine equipment and mine machinery.

One feature which attracted the attention of the committee in considering Mil-

waukee as a meeting place for the American Mining Congress was the belief that large attendance of operating officials interested in metal mining enterprises will find that city convenient. This, of course, is particularly true in connection with the iron ore regions in Minnesota, Wisconsin and Michigan and the important copper mining districts on the Michigan peninsula. In a word, Milwaukee is a particularly happy selection as a meeting place for both operators interested in metal mining enterprises and coal producers.

Plans are already being developed for the purpose of adding to the exposition many special features of special interest both to mining officials and to the general public. An effort will be made to secure a much larger number of exhibits by individual states illustrating the opportunities for mining developments and a special arrangement will be made with several of the important railroad systems for the purpose of showing the mineral development and opportunities presented along the lines of these systems.

According to plans which have been worked out, the entire exposition will be staged on the main street level floor. It may be possible, in addition, to work out in the basement floor a replica of underground mining conditions which will enable manufacturing concerns to illustrate in an effective and spectacular way the utilization of modern mine equipment and mine machinery.

### NOTED FOR COOPERATION

Milwaukee, as a community, is noted for the cooperation which it renders in the successful handling and development

of conventions held in that city. A strong and representative Milwaukee committee will be organized shortly, and, because of the early development of the plan for this meeting and of the arrangements to be made, it is believed that the 26th Annual Convention and Exposition of the American Mining Congress will surpass in every way any of the large and important meetings which have been held in the past.

**WAGE REPORT**—The Department of Labor has issued a report on the union scale of wages and hours of labor on May 15, 1921, covering 930,903 members of organized trades and occupations in 66 of the principal cities of the country. The report shows that in all trades the increase in weekly wage rates over May, 1920, was 3 percent; over 1917, 72 percent; over 1913, 93 percent; over 1910, 103 percent, and over 1907, 111 percent. In 1921 regular hours of labor were on the same level as in 1920, 5 percent lower than in 1917, 6 percent lower than in 1913, 7 percent lower than in 1910 and 8 percent lower than in 1907. Rates per hour in 1921 were 3 percent higher than in 1920, 8 percent higher than in 1917, 105 percent higher than in 1913, 117 percent higher than in 1910, 129 percent higher than in 1907. Granite cutters in 1921 had a increase of 10 percent and stone cutters 3 percent in weekly wages over 1920. Changes in the metal trades group range from a decrease of 9 percent for core makers to an increase of 11 percent for boiler makers' helpers.

# OIL SHALE AND ITS PROBLEMS

By DR. VICTOR C. ALDERSON

**T**O AN ONLOOKER, it seems that the use of raw coal as fuel is, in the first place, dirty; in the second place, it is uneconomical, and, in the third place, it is entirely unnecessary. In England the price of coal has gone so high that there is a very strong, a widespread movement, to turn the raw coal, not only the high grade but the low grade, by low temperature distillation into gasoline, oil and a coke that will serve as ordinary fuel. Now, that is a large movement; it has made some progress in this country, but is a movement that I think will make still greater progress in the future. The use of raw coal as fuel except in a few exceptional localities, is near the end. Another source of fuel is, of course, gas; another source of power is from the hydroelectric plants, but in the future oil will be our chief raw fuel. The report of the combined committee from the U. S. Geological Survey and of the American Association of Petroleum Geologists, made a guess that we have left about nine billion barrels of oil in underground pools that can be reclaimed by present day methods. As a matter of fact, in Colorado alone in one ten-foot seam we have four times that amount and great quantities in other states.

## BASIS OF DEVELOPMENT

In all probability, we shall hear from some of those other states, especially Kentucky, because they are sensitive on that point. The basis, it seems to me, for the economic development of this nation and of all nations is a plentiful supply of oil. When the time comes that we must have oil from some other source than from wells, we shall find the oil shale deposits are our main source of supply. There is no alternative; we must have oil; the question of cost will be a distinctly secondary one.

This movement is so broad, as I look over it, that I cannot help calling your attention to the fact that the shales that are productive of oil are world-wide in their extent. In Norway and Sweden the government has laid aside a large sum of money for experimental work and development of their own oil shale deposits. In Esthonia, the new Baltic state of old Russia, the oil shale deposits form the main national wealth. They are being developed faster, I think, than any other place in the world. In Germany the deposits are being exploited by the government with the single idea of making Germany independent of oil importation. In New South Wales the large deposits are now being worked

on a successful basis. They have had technical, labor, and many other troubles, but now, I think, those are overcome, and there will now be produced a large supply of oil from the oil shale deposits alone for local use in New South Wales.

In Tasmania the government has made a large appropriation for the field examination of the oil shale deposits, and also for retorting, refining and other experimental work. In Canada there are also great deposits, and the Anglo-Persian Oil Company has put aside five million dollars to develop and experiment on the oil shale in Nova Scotia alone. There are also deposits in Newfoundland and in New Brunswick. In our own country there are a number of states in which are large deposits which can be developed into successful commercial enterprises. When people talk about the oil shale industry supplanting well oil, I think it is wise to correct them and to call their attention to the fact that they are using the wrong words. I do not believe that in our lifetime one will ever supplant the other. Shale oil will supplant well oil. In localities where oil shale can be worked to advantage plants will go up and the local community will be supplied with oil and its derivatives. Such plants will go up here and there, wherever they can be operated on a successful commercial basis. In looking over the field, I think it is wise to remind you that this whole business is one of several chapters, and one should not let himself regard it as only of one chapter.

## INVOLVES TESTING OF SHALE

We must remember that it involves the testing of the shales, the mining, the crushing, the retorting, the refining, and, finally, the distribution of the finished article. It is a long continuous series of operations. No one of them is of such tremendous importance that it overshadows everything else. Different men, with different ideas, will attack the problem at different places. Essentially, there is necessary a very large supply of the best grades of engineering ability; a supply of chemical ability and then, more than that, financial ability is demanded, because this is not a one-man game. It is a project of very large tonnage, large capital, large scale operations. We should not fool ourselves by thinking that it is like the prospector working out in the hills, who works on a gold placer and gets his pay every night when he cleans up. It is not that at all. It is a project of large capacity, and of so scientific a

character that the technical ability, in order to carry it through successfully, must be of the very highest order.

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## SHIFT IN HIGH GEOLOGICAL SURVEY POSTS

*George Otis Smith, Resigning To Assume Place on Coal Commission, Is Succeeded by Phillip S. Smith—W. C. Mendenhall Advances to Place of Chief Geologist*

**A**DMINISTRATION of the Geological Survey this month entered into new hands through the resignation of Dr. George Otis Smith as director and the retirement of David White as chief geologist. Philip S. Smith, who has been serving as administrative geologist takes the post of director and W. C. Mendenhall, a member of the Survey's staff for twenty-eight years, succeeds Mr. White in the office of the chief geologist.

Dr. Smith tendered his resignation because provisions of the federal law prevented him from taking the place as a member of the President's coal commission so long as he held another government office. President Harding, in accepting the resignation, made it plain that Dr. Smith would be re-appointed as director immediately upon completion of his work with the commission.

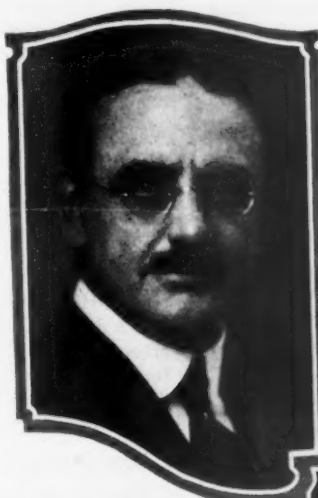
## HAS BROAD EXPERIENCE

Philip S. Smith brings to his new position a wide experience of geological knowledge and unusual executive ability, having spent practically his entire career in the Survey's service. His work in connection with economic and geologic studies of Alaska is especially outstanding.

Mr. Mendenhall has served for more than ten years as geologist in charge of the Land Classification Board with a background gained from his geologic field work which has carried him from the Appalachians to Alaska. Herman Stabler will be promoted to fill the place on the board vacated by Mr. Mendenhall.

Commenting upon Mr. White's retirement, Dr. George Otis Smith said:

"On November 16 David White will have completed ten years' service as chief geologist. This contribution to the administration of the Survey has been at the expense of his own scientific work, even though he has thereby increased the scientific value of the work of his associates. It seems fair that his oft-repeated request for permission to return to his own geological studies now be granted, not only to gratify the natural desire of an investigator who has laid aside research problems one after another but



Philip S. Smith (above), who stepped into office as Director of the Geological Survey when Dr. George Otis Smith resigned to take up coal commission activities, and W. C. Mendenhall (right), who has been appointed chief geologist of the survey.



to promote the advancement of our science.

"The retirement of Mr. White to productive research suggests anew the sacrifice involved in the administration of scientific work. Administration by scientists is the keynote of the Survey's policy, yet the intellectual cost item involved in this drafting of our best investigators must be kept down to minimum. Had I been free from other demands on my time this past summer, I would have taken this occasion to start a somewhat radical reorganization of the geological branch, the chief purpose of which would be to reduce its administrative overhead—too many geologists are giving valuable time to work for which they were not trained. Necessarily now this task of simplifying the organization must be left to the new chief geologist and acting director, but I ask for them a sympathetic acceptance of the proposal for a less elaborate but more elastic grouping of the activities

of the branch. Not machinery, but product, is the measure of efficiency in a government scientific bureau.

## U. S. GOLD STOCK SETS NEW MARK

**T**HE MONETARY STOCK of gold in the United States on October 1 reached the unprecedented volume of \$3,874,178,711, the largest accumulation of gold in the world and estimated to be about 45 percent of the world's gold stock. Of this amount, \$3,247,510,704 is held in the Treasury, this gold being for the most part in the form of bullion reaching the Treasury through deposits in mints and assay offices, against which deposits gold certificates are issued or the gold fund of the Federal Reserve Board created. Only a portion of the gold received is coined, the balance being refined and run into bars.

Officials of the Department of Commerce are giving the gold situation in the world a great deal of economic thought, feeling that the heavy drain to America has contributed to the instability of foreign currencies, not only by the diminution of their essential guarantees but also by their fluctuation involved in liquidating trade balances in this fashion. The minimum legal necessities at the moment for assurances to our currency and credits amount roughly to about \$1,600,000,000, but for a 60 percent reserve of security we would require about \$2,400,000,000. Therefore, our surplus amounts to over \$700,000,000. The automatic tendencies in our international trade and financial relations are, however, setting strongly toward rectification of this whole situation without artificial action, in the opinion of officials.

## WORLD WATERPOWER FIGURES ARE COMPILED

**T**HE WATERPOWER committee of the Conjoint Board of Scientific Societies of Great Britain, according to advices received by the Department of Commerce, quotes the following estimate of the power now being used in the various countries of the world:

Countries	B. H. P. available	B. H. P. developed	Percent utilised
United States...	28,100,000	7,500,000	26.7
Canada .....	22,900,000	3,385,000	14.8
Austria-Hungary	6,460,000	670,000	8.8
France .....	5,587,000	1,500,000	26.9
Norway .....	6,500,000	1,250,000	19.2
Spain .....	5,000,000	540,000	10.8
Sweden .....	5,500,000	1,100,000	20.0
Italy .....	4,000,000	1,250,000	31.3
Switzerland ....	3,000,000	650,000	21.7
Germany .....	1,425,000	750,000	52.5
Great Britain ..	900,000	200,000	22.2

It is estimated that 75,000 horsepower is being used for the world's factories, including electric lighting and street railways, 21,000,000 horsepower for the world's railways, and 24,000,000 horsepower for the world's shipping.

# THE PURPOSE OF STANDARDIZATION IN MINING

By CHAS. A. MITKE  
*Chairman, Metal Mining Branch,  
Standardization Division,  
American Mining Congress.*

**T**HE PURPOSE of standardization in mining is primarily the reduction of operating costs.

Standardization aims at the elimination of waste and the attainment of efficiency in production. This necessitates the largest output with the smallest waste of time, material, or energy.

To promote standardization, it is necessary to adopt labor-saving, cost-reducing equipment, and to systematize and standardize all operation much in the same manner as that effected by the use of cost-reducing systems in manufacturing plants throughout the country.

## MANY MISCONCEPTIONS

There are many misconceptions of the meaning of standardization in industry. Much has been said and written about the dangers of overstandardization. Too many people believe that, having once standardized on some method or equipment, they have definitely standardized for all time to come, and that later, when something newer and better makes its appearance, it is impossible to change. Webster's dictionary gives as a definition of a standard:

"That which is established by authority, custom, or general consent, as a model, or example, criterion, test."

It is therefore evident that when, later something better receives general approval, the former standard no longer meets with unanimous approbation, and it is therefore time to change. The best definition of a standard that I have seen is one that appeared in a publication of the Carnegie Institute, and which I have quoted before, viz:

## DEFINITION OF A STANDARD

"A standard is simply a carefully thought-out method of performing a function, or carefully drawn specifications covering an implement, or some article of stores, or of products. The idea of perfection is not involved in standardization. The standard method of doing anything is simply the best method that can be devised at the time the standard is drawn. \* \* \* Improvements in standards are wanted and adopted whenever and wherever they are found. There is absolutely nothing in standardization to preclude innovation. But to protect standards from changes which are not in the direction of improvements, certain safeguards are erected. These safe-

guards protect standards from change for the sake of change. All that is demanded \* \* \* is that a proposed change in a standard must be scrutinized as carefully as the standard was scrutinized prior to its adoption. Standards adopted and protected in this way produce the best that is known at any one time. Standardization practiced in this way is a constant invitation to experimentation and improvement."

From this it will be seen that there is nothing in standardization, practiced in this manner, which will eliminate initiative, or forbid progress. Rather, it is, as stated, an invitation to continue further research, investigation and experimentation.

## INTRODUCTION OF STANDARDIZATION

In the early stages of mining, there was no attempt at standardization. Every stope and every raise was different, tunnels and drifts were of different sizes, and variations of every kind and description existed throughout the underground workings.

Later, the necessity for cost cutting compelled a study of methods, practices, and operations, and it was surprising to find how many things lent themselves to simplification. As a result of such simplification, it was discovered that great economies could be effected. Thus, unconsciously, standardization was introduced, although at that time reductions in costs were credited to systematization and better efficiency, rather than to standardization.

Less than ten years ago it was firmly believed that practically every mine had to have from three to eight different kinds of steel, owing to the great variety of ground that was constantly being drilled and broken. Through research and experimentation, it has now been found in some mines (in which almost every conceivable class of ground is encountered) that the work can be satisfactorily accomplished with only one kind of steel. Before any attempt was made at reducing the number of different kinds of steel, statements were repeatedly made that "it can't be done." It is now an accomplished fact.

It was at first felt by quite a number that the systematization of operations would leave but little opportunity for the miner to exercise his ingenuity, as he was compelled to heretofore when everything required individual thought. However,

it was found that by systematizing routine operations the miner was then able to use his ingenuity in other directions. This is clearly proven by the fact that the miner who has greater skill and intelligence and exercises his ingenuity can make from 50 percent to 200 percent more money when working on bonus than he who merely does what he is told in order to get by.

To encourage the miner to put forth his best efforts in obtaining maximum production an incentive over and above day's pay must be offered. This is purely a reward for better skill to the man who can accomplish more than an average day's work. It is also an encouragement for him to continue his better efforts, otherwise he will drop back into a daily routine which is equal to the others. This, of course, brings up the fundamental and, as yet, unsolved question as to "what constitutes a standard day's work."

## LOW PRODUCTION AND HIGH COSTS

While we are as yet in the early stages of standardization, and much remains to be done along this line, still it is rare at the present time, to find a mine in which standardization to a more or less degree is not practiced. While traveling in foreign countries recently, I happened to visit such a mine. The contrast between conditions at this property and those in the states struck me forcibly. In this particular high-grade property, it took approximately four men to get out one ton of ore, whereas, in this country, in mines of similar character, there are frequently cases where the reverse exists, and at least four tons per man are produced for every man in the mine. However, if the conditions under which this  $\frac{1}{4}$  ton per man was produced were known, this low tonnage production would not be surprising. I have never before had a better illustration of the lack of standardization, or the need for system and efficiency than this mine presented. As an illustration, take an opening from one level to another, a distance of one hundred feet. Instead of having wooden ladders made on surface and quickly put in place, so that a man might go rapidly from one level to another, costly and massive rock stairways were built by the native workmen, each rock having to be hewn separately on surface, and then transported, being handled many times, until it finally reached its destination in the lower levels, where

it was properly fitted into place and a finished piece of masonry completed. I could go on enumerating many other things just as cumbersome and expensive as the building of stairways. This lack of standardization was further characterized by extremely high operating costs.

#### POSSIBLE SAVINGS OUTLINED

While the market for a number of the metals, such as silver, lead, zinc, and iron, has recovered to a large extent from the after effects of the war, upon resumption of operations, after a period of idleness of practically a year, the copper industry finds itself confronted with a condition which offers a pre-war market price of 14 cents per pound for copper, and wages which are not far below war-time figures. Whereas, on a pre-war market of 14 cents per pound, wages ranged around \$3.50, they are now \$4.75 to \$4.95, while the highest figure reached during the war, when copper went to 32 cents a pound was \$6.10. In other words, there is a pre-war copper market, and practically war-time wages and mining costs.

Even though the market price of the other metals has arisen to some extent, they also have to meet high production costs.

Moreover, labor is more exacting than in previous years and, in addition to high wages, is demanding better working conditions.

If ever there was a time when standardization was needed in order to simplify the various mining operations and lower costs, it certainly is today.

#### EXAMPLES OF POSSIBILITIES

Take a fair annual production, for the copper industry alone, of one billion and a half pounds of copper. Suppose, through standardization, it is possible to effect a very small saving, even as small as a quarter of a cent per pound, this would at once result in an annual saving of \$3,750,000. Suppose this saving were increased to half a cent, the annual saving to the companies would be \$7,500,000, and suppose one cent a pound could be saved, and this is not too much to expect, the saving then would approximate \$15,000,000 a year. This is a sum well worthy of our efforts, and when it is considered that these figures refer to the copper industry alone, and do not include the iron, silver, lead, zinc, or coal output, it affords something to think about.

In order to attain such saving under present conditions,

"A standard plan of operations should be worked out in each and every case in order that human efforts may be utilized to the greatest advantage."

This requires an extensive study of the

various details of mining, and then training the men in the most efficient methods of performing the daily tasks. It does not mean a mere intimation of what is to be done, but an instructive explanation of how the work should best be accomplished.

"Standard equipment should be adopted in order to facilitate routine work, and thereby make the efforts of the men more productive."

By standard equipment is not meant methods such as those practiced in one particular mine, in which two different types of wrenches are used by the miners, one for the air line and the other for the water line, one with a square head and the other triangular, so that they are not interchangeable, and every valve is supposed to be different, so that the wrench for one triangular valve will not fit the next triangular valve.

#### SYSTEMATIC ROUTING NECESSARY

I have repeatedly emphasized the great need for systematic handling of tools and supplies underground. A large proportion of time is still lost in many mines, due to the lack of proper routing of all underground material. In factories, it is the imperative duty of every foreman to see that the men do not waste a moment while waiting either for supplies or tools. If anything goes wrong with the worker's machine which cannot be fixed on the spot, another is immediately substituted for it, because it has been learned through costly experience that delays occasioned by faulty equipment result in a decided lessening of output. From time to time, statements by miners have been published in mining journals, complaining that in the mines in which they work they are compelled to spend a large proportion of their time in hunting tools, instead of concentrating on productive effort.

#### NEED FOR MECHANICAL SHOVELS

One of the crying needs of the mining industry is a mechanical shoveling machine for use in small drifts, approximately 5'x7'. In mentioning a 5'x7' drift, I do not mean to intimate that these dimensions should be selected as the standard size for small prospect drifts or tunnels. Possibly 6'x6', 5'x7½', or some other small size will eventually be selected. What we do need, however, is a shoveling machine that can be used in small prospect drifts of approximately this size, and which will load a small train of about six cars without the necessity for switching. There are already a number of mechanical shovels on the market that can be used with more or less success in larger drifts and tunnels, such as 8'x10', 10'x10', etc., but not sufficient attention has been given to the small prospect tunnels. Thousands of

feet of these are driven every year, and it is the elimination of hand shoveling in such small tunnels that is one of the important items in cost cutting underground. The necessity for the elimination of hand methods in excavating was impressed upon me when in the city of La Paz, Bolivia, last year. A new building was under course of construction and the foundations were being excavated. A veritable army of men, women, and children were employed in this work, each one scooping up as much earth as his or her "manta," or blanket, would hold, then shouldering their load, they carried the earth some six or seven blocks away to the dump. Contrast this with our modern methods, where we use plows, scrapers, and all kinds of power shovels, horse, steam and electric transportation.

Underground, while the ore and waste is not transported on the shoulders of the workers, we are still to a large extent in the hand stage. Many, many miles of small prospect tunnels and drifts are driven every year, and every pound of that rock is shoveled up by hand into small cars, many of which are then pushed by hand power to their destination. As a matter of fact, there are mines which contain over two hundred miles of such workings to a single mine. There is a large field here for the miner, inventor, and manufacturer to exercise their ingenuity and design some mechanical contrivance which will take the place of all this hand labor.

#### UNDERGROUND TRANSPORTATION PROBLEMS

In taking up the problem of the standardization of underground transportation, the chairman of this committee found that a review of ten large mines disclosed the fact that in every case the types and capacities of cars were different, the gauge of the track and weight of rail was different. The spacing of ties and percent of gauge varied in each case, and, in fact, a tremendous variation existed in all details of the equipment.

Take, for instance, the case of hand tramming cars. As Mr. Daly, the chairman, states in his report, "A hand trammer is a human being—a one man power. It is true that some men are stronger, and some are weaker, but the average after all is a one man power. If this is true, why should the capacity of the hand tramming cars vary as much as they do? Why should the trammers in one mine be pushing a car with only twelve cubic feet of ore in it, while trammers in other mines are pushing cars containing 14, 15, 16, 20, 22, 24, 30 and even 40 cubic feet of ore? Somebody's hand tramming is costing him a lot more per ton of ore trammed than it should. Different conditions in different mines



should not make different conditions in trammers."

Again, taking up the question of the grade of track, Mr. Daly states:

"The trammers in one property with a level grade are expending an unnecessary amount of energy in pushing a loaded car out, while the trammers in the property that has a grade of .83 percent are expending an unusual amount of energy in pushing the empty car back."

A study of this report on underground transportation will disclose many other costly irregularities. Surely here is a field for the introduction of standardization, and undoubtedly the adoption of suitable standards will result in great cost reductions.

#### MINE TIMBER STANDARDIZATION

Consider the amount of timber used underground. The Bureau of Mines estimates that the annual consumption of timber by the mining industry of the United States amounts to 293,365,000 cubic feet, of which 151,140,000 are used in bituminous mines, 61,600,000 in anthracite mines, and 31,500,000 in iron mines, and 49,125,000 in mines producing other ores. The increase in annual timber consumption in mines since 1905 has been 46 percent, and the cost of mine timber to anthracite mines has increased from 6.6 to 27.5 cents per cubic foot from 1905 to 1920; and in iron mines in the Lake Superior region from 5 to 24 cents. The cost to metal mines, other than the iron mines, has also greatly increased. Moreover, we are facing a serious problem in the decrease in supply and quality of timber.

It has been estimated that an average of possibly 85 percent of all timber taken underground is used in working places of a temporary nature and is not recoverable, nevertheless it must be sufficiently strong and durable to bear weight during the time it is in use.

Here is undoubtedly a field for investigation. With quantity and quality of lumber decreasing and the price, according to the Bureau of Mines, approximately five times what it was seventeen years ago, the mines are surely facing a serious situation as regards their lumber problems.

#### STANDARDIZATION OF FIRE FIGHTING

In the light of recent disasters, the need for standard equipment, rules and practices concerning the handling of mine fires is evident to everyone. In reviewing evidence after a disaster has taken place, it is generally easy to state what should have been done at the critical moment, but the important thing is to formulate general rules, have all the

equipment on hand and intact, and train the organization so that they will know exactly what moves to make in the event of an emergency.

Many lives have been sacrificed and millions of dollars lost through underground fires. Undoubtedly, if the proper preparations had been made and the principles of fire control and methods of attack thoroughly understood, this loss of life and property might, to a large extent, have been avoided. While not every move in connection with the handling of incipient mine fires can be standardized, as circumstances govern conditions to a large extent, nevertheless a fund of information, based upon past experience, is available and a great deal can therefore be done in presenting standard practices and principles which would be helpful in all cases.

It has been well said that "Efficiency in production should apply to the human factor as well as to the organization, machinery, and materials."

Good working conditions go hand in hand with greater efficiency. In hot and dusty mines a large percent of the shift is lost, due to the necessity for frequent rests on the part of the men, as they cannot do a fair day's work under oppressive conditions.

The providing of good working conditions will tend to greatly reduce the large labor turnover, which is the source of considerable expense at the present time. One of the most important items in the maintenance of good working conditions is satisfactory ventilation.

The U. S. Bureau of Mines have found in the course of its investigations that the losses to mining companies caused by deficient ventilation amount to as much as 10 percent to 25 percent of a shift in cool mines where the air is stagnant, and as high as 50 percent to 75 percent in hot, humid mines, according to a bulletin by D. S. Harrington, of the bureau's staff.

A standard atmosphere, in which a man can do a fair day's work, must be aimed at. This standard is to be obtained *not only in a few favorable places, but in every working place* throughout the entire mine. In every instance in which proper attention has been paid to the ventilation and a satisfactory standard attained, the tonnage per man shift has immediately increased, in some cases it has actually been doubled.

In South Africa, where detailed investigations of underground conditions have been progressing for a number of years, it was found in one particular instance, where the mine atmosphere fell far below the recognized standard, that the output for the entire mine was 21 percent below what it would have been had this standard atmosphere been attained throughout the workings.

Quite apart from the increased efficiency resulting from the providing of better working conditions, the miner experiences better health, which puts him in a more contented frame of mind, allows him to exercise his ingenuity to the utmost, and keeps him constantly alert to the dangers connected with underground operations, which renders him less susceptible to accidents.

In addition to the increase in output, due to the introduction and attainment of a standard atmosphere, the installation of a first-class ventilating system is always accompanied by a great saving in compressed air. In some instances, the saving in the use of compressed air during the first year and a half has been sufficient to offset the entire cost of the installation. In other cases very substantial savings have been effected.

#### SHOULD PROGRESS STEADILY

Having made certain definite, cost-reducing advances in standardization, we should progress still further until we have exhausted all its possibilities. Already in many camps many employees in the various departments, some of them in positions of minor importance, are studying this problem and endeavoring to apply standardization to their daily routine. This cannot but have a cumulative effect, and so long as the subject is kept alive, each one in turn will contribute his share toward solving this problem. The more publicity such a movement is given, the more people will begin to think along this line, and eventually, from many quarters, standards will begin to evolve, which will have far-reaching effects throughout the industry.

We come here annually not to formulate and decide upon individual standards (as that cannot be accomplished hastily, but must be the result of careful thought and deliberation after all the details and evidence have been weighed), but to obtain different views and ideas concerning standardization and to discuss the work already accomplished by the acting committees, with the hope that such publicity may give further impetus to this movement.

**TAX DECISION.**—The Committee on Appeals and Review of the Internal Revenue Bureau, acting on an appeal of a company, has reversed the action of the income tax unit in the assessment of tax based on restoration to net taxable income for the year 1917 of depletion claimed in 1917 and prior years on account of cancellation of lease under which minimum royalties had been received and no ore extracted.



William E. Borah

## Woofing and Warping

### XIII. Senator William E. Borah

#### *A Series of Scrutinies Directed Toward Notable Legislative Personalities*

By IRA L. SMITH

**M**OHAMMED had just finished eating a club sandwich at Child's in Mecca late one winter night back in 625, when he tossed his whiskers back over his shoulder in a philosophical way and told the fellow sitting across the table from him that to every dog comes his day. There was almost a fanatical gleam in the old boy's eye as he said, "All a fellow has to do is park around long enough and keep hitting the ball and things will come his way." He knew his stuff.

Getting down to brass tacks and a more modern day, Bill Borah, Idaho's irrepressible individualist, has been sliding down his own cellar door for many years with only an occasional playmate. Being as unusual in political circles as a three-legged calf in a barn-yard, he has had to buck along with hardly more than a smattering of company.

Now has come the day when progressives are as stylish as long skirts. Now has come William E. Borah's chance to duck old party mandates in hot water with a zeal that has been brewing since much farther back than day before yesterday.

Public opinion rather likes to jab pins and needles into itself by hanging on to the hoakum that success in politics demands that individuality and independence be tossed into the ditch. Mr. Borah has managed to prove that at least one dent can be put in this idea.

Perhaps it is only because he managed to tie his wagon to some sort of political comet which yanked him out of an Idaho law office into the Senate without stopping at way stations, where he might have lost some of his fervor for the untrammelled.

Mr. Borah's independence fights many battles for him. It is his big punch. But it also proves to be something of a ball around the leg of his political self.

He has else than mere independence, though. Words love to frolic within his mind, where they are marshalled into formations that amaze the ear when they pour out on the breast of a speaking voice that could give cards and spades and still win on quality.

Although he already has spent a decade in the Senate, Mr. Borah not yet has passed the peak of his career. Holding a position aloof from the general scurrying, he stands available to take the lead in a move of vast scope. The very consistency of the inconsistency of his political activities, as they hook up with first one clan and then another, might allow him to pick up lines that others would not dare to touch.

Personally, he seems to have subconsciously soused himself in his tendency toward the hermit role. He has few intimates, rarely mixes socially, and would appear to be a member of some thought-juggling clan far removed from legislative activities. With little play or flare, he just goes along being Borah.

And out of the natural leaps the sincere. To remark that Mr. Borah is sincere is as bromidic as to make the startling declaration that the normal man has ten toes. In his sincerity rests his stability, for if ever he should—in his detached position—take insincerity by the arm he would expose himself to attacks aimed against his enviable possession of independence. He has served a notable purpose in providing a gag for the mouths of those who spent cynical blurbs declaring that sincerity is foreign to high places.

And there is forever a thrill in gazing at a mid-summer cloud rolling along its way far above its heavier and clumsier fellows that hang close to the earth to see where their shadows fall.

## PREFERENTIAL RATE REPORT IS ISSUED

*Commission Publishes Results of Extended Studies—Cites Commercial Equalization as Purpose—Recent Developments Alter Conclusions Previously Drawn*

**T**HAT PREFERENTIAL import rates are maintained for the purpose of equalizing the commercial advantages of rival ports and of the alternative routes over which the foreign trade of the United States is carried, and are not established in order to neutralize customs duties or discriminate against domestic products, is the conclusion reached by the United States Tariff Commission, in its report just made to Congress.

### THREE ANGLES ARE SEEN

Three possible angles of the question of relationship between import rates and protective tariff laws were considered by the commission. First, are such rates established for the purpose of defeating import duties? Second, are such rates maintained in any case for the purpose of supplementing import duties or otherwise protecting domestic industries against foreign competition? Third, to what extent, if any, do import rates, though established for other purposes, neutralize or nullify the effect of protective import duties?

The commission finds that in the 1920 rates established August 26, 1920, no trace of a desire to nullify the effect of protective import duties was found; that in the case of import rates higher than domestic rates many of the tariffs contain a rule to the effect that the domestic rates are to govern; and that import rates designed primarily to promote the foreign trade of the United States by discrimination against domestic commerce are the exception rather than the general rule. The report points out that when import rates were reestablished after their general cancellation in 1918, freight-rate changes were controlled directly by the Federal Railroad Administration, and, therefore, it is deemed unlikely that a branch of the government would fix railroad import rates with the intent to nullify the commercial policy expressed by Congress in the tariff act of October 3, 1913.

### SPECIAL IMPORT RATES

Concerning the special import rates on certain commodities established since 1920, their bearing upon the present protective import duties, and their effect upon domestic products, the commission expressed no opinion except to state in a footnote that "it is, however, not believed that such readjustments in any way change the principles and conclusions reached in the report."

The report states that "no import

rates lower than the domestic rail rates are at present applicable at the basic rate ports of the North Atlantic seaboard." The report refers, however, to the rates in effect during the year 1920, and does not take into account reductions and readjustments which have been made since 1920. For example, the present import rates on certain commodities from the ports of New York, Philadelphia, and Baltimore to points of consumption are so much lower than the domestic rates on the same commodities that it is questionable whether domestic production of these commodities will be stimulated or whether an appreciable increase in domestic traffic will result.

### LARGE REDUCTIONS CITED

Instances can be cited where rates on certain imported commodities, now subject to tariff duties, have been reduced from 46 to 52 percent below the 1920 rates, whereas no reductions whatever have been made in the domestic rates on the like commodities produced in the United States. If the Commission's investigation had covered present rate adjustments, instead of those in effect during 1920, doubtless numerous instances would have been disclosed where import rail rate differentials neutralize customs duties.

With respect to the 1920 rates shown in the report, including rates on manganese ore, it is stated that "the differentials neutralize shipping costs in the interest of particular ports and routes, but do not neutralize the effect of tariff duties when the differentials do not go beyond the point of equalizing such ports and routes having no special rail rates for imports." But the 1920 rates are history. Domestic producers of the commodities affected have to deal with present rate adjustments; and if, after payment of the tariff duty, the importer of these commodities, by reason of present preferential import rates, is able to supply his needs from foreign sources, the domestic producer has no market for his product and his business is stifled.

### NO FIXED RELATIONSHIP

While there may have been, in 1920, no fixed relationship between rail import rates and customs duties, as indicated by the report, certain adjustments now in effect apparently have a definite, though perhaps not fixed, relationship to these duties. This relationship may or may not have been established for the primary purpose of equalizing commercially

the various ports involved. There may have been no intention of discriminating against domestic products. However, if this is the case, where such discrimination can be shown in favor of dutiable commodities imported, there should be no hesitancy on the part of the carriers concerned to remove the discrimination, irrespective of port differentials, which, in certain cases, have no bearing upon the relationship, as they are merely "paper rates."

## COPPER SMELTING SHOWS DECREASE FOR 1921

**R**EPORTS MADE to the Bureau of the Census show a decrease in the activities of the establishments engaged primarily in the smelting and refining of copper during 1921, as compared with the year 1919. The total value of products reported amounted to \$234,895,200 in 1921, and to \$651,101,600 in 1919, a decrease of 63.9 percent. Of the 28 establishments reported for 1921, 8 were located in Arizona; 4 each in Michigan and New Jersey; 3 in Montana; 2 in Tennessee, and 1 each in Maryland, Nevada, New York, Utah, Texas, Virginia and Washington. Six establishments reporting in 1919 were idle in 1921.

The decrease in production has been accompanied by decreases in the number of persons employed, in the total amount paid during the year in salaries and wages, and in cost of materials. Considerable fluctuation is noted in the number of wage earners in 1921. In January, the month of maximum employment, 12,476 wage earners were reported, and in June, the month of minimum employment, 6,602, the minimum representing 52.9 percent of the maximum. The average number employed during the year was 8,294 in 1921 as compared with 17,345 in 1919. A classification of the wage earners with reference to the prevailing hours of labor in establishments in which employed, shows that for 6,489, or 78.2 percent of the total (average) number, the prevailing hours per week were between 54 and 60; and for 1,447, or 17.4 percent, they were 48 per week.

The returns indicate that the combined output of the 28 active establishments was approximately 40 percent of their maximum capacity based upon a demand requiring full running time; 14 establishments with 55 percent of the products being above said average; and 14, with 45 percent below.



## COURT ATTACKS DICTATORIAL WAGE SCALES

*To Deprive Individual of Right To Freely Sell His Labor at Highest Wage Reduces Him to an "Automaton," Is High Tribunal's Statement*

**I**NSERTION by the legislative branch of the government of its activities into the fixing of wage scales would induce "calamity," in the view of the Court of Appeals of the District of Columbia. Handing down a decision declaring invalid the female minimum wage law passed by Congress for the District of Columbia, this tribunal declares that a governmental fixing of wages would create dire results for wage earners, stating the workers would be deprived of the most sacred safeguard the Constitution affords.

Swinging from this trend of thought, which indirectly reflects upon collective setting of wage scales by stating that to deprive the citizen of the right to freely contract and sell his labor for the highest wage his individual abilities command would be to reduce him to "automaton," the opinion strikes into the broader field of a discussion of paternalistic tendencies. "It is paternalism in the highest degree and the struggle of the centuries to establish the principle that the state exists for the citizen and not the citizen for the state would be lost. It is but a step to a legal requirement that the industrious, frugal, economical citizen must divide his earnings with his indolent, worthless neighbor. The modern tendency toward indiscriminate legislative and judicial jugglery with great fundamental principles of free government whereby property rights are being curtailed and destroyed will, if persisted in, end in social disorder and revolution. Let no one imagine that our civilization is such that property rights can thus be socialized without the grossest abuse of the privileges granted or that the restraint of abuses can be left with safety to legislative or judicial discretion."

The opinion of the court says that if Congress may establish a minimum wage for women, it may establish a maximum wage, a fixed wage, and wages for men. "The power of Congress to fix wages between private individuals is either constitutional or unconstitutional," says the court. "If the power exists to fix wages in the interest of good morals and the promotion of general welfare, power must likewise be conceded to fix the prices of commodities entering into the determination of an equitable wage. Civilization proves that when the citizen is deprived of the free use and enjoyment of his property, anarchy and revolution follow, and life and liberty are without protection.

Courts should be slow to lend aid to the government in this modern tendency to invade individual property rights."

## CONGRESSIONAL MINING COMMITTEES UPSET

**M**ATERIAL CHANGES in the personnel and leadership of the mines and mining committees of the House and Senate that will sit during the next session of Congress will result from the recent elections. Defeat for reelection of Senator Miles Poindexter, Washington, and Representative



Tasker L. Oddie

Marion E. Rhoades, Missouri, necessitates appointment of successors to fill the places they hold as chairmen of the two mining committees. Senator Oddie, Nevada, is scheduled to become chairman of the Senate committee, the recent resignation of Senator Newberry, Michigan, who was in line for the post, making it probable that the head of the body again will be a Senator from a far western mining state. Since only four Representatives now members of the House committee were reelected, the chairmanship of that body cannot be forecast with accuracy. If, however, the four survivors of the balloting are retained upon the new committee, any one of them will be in direct line for the post. These Representatives are: Robinson, Kentucky; Williamson, South Dakota; Coalton, Utah; and Sutherland, Alaska.

Appointments also will have to be

made on the new House committee to fill the places of the following:

Echols, West Virginia; Brooks, Illinois; Lohring, Indiana; and London, New York. Representative Arentz, Nevada, who introduced the proposed mine revision law, now a member of the House committee, was not a candidate for reelection to the House, having engaged in a campaign for the Senate in which he was unsuccessful. Another vacancy on the House committee has been created by the death of Representative Connell, Pennsylvania. None of the Democratic members of either the Senate or House committees were affected by the election.

## FEDERAL PETROLEUM CODE CHOSEN

**P**ROPOSED CHANGES in the classification of lubricating oil specifications were discussed at a joint meeting of the Interdepartmental Petroleum Specifications Committee, the Advisory Board to the Committee, the Lubricants Division of the Society of Automotive Engineers, and the Technical Advisory Committee of the American Petroleum Institute, held in Washington, D. C., November 13, at which N. C. A. Smith, petroleum chemist of the Bureau of Mines, presided.

Separate schemes for classification were presented by representatives of the Society of Automotive Engineers and by the Navy Department. After considerable discussion, it was brought out that a difference exists between turbine oils for land service and turbine oils for marine service; also, that for turbine oils with paraffin base and asphalt base, lubricants seem to have the same effective viscosity at about 130 degrees Fahrenheit.

A special committee, composed of Messrs. William S. James of the Bureau of Standards, Dr. T. G. Delbridge of the Atlantic Refining Company, and H. C. Mougey of the General Motors Research Corporation, which was appointed to consider a list of descriptive names to be used for lubricating oils in the Federal specifications, for explanatory purposes only, reported a majority opinion that four names should be used together with descriptive numbers; light oil, to cover S. A. E. numbers 15 and 20; medium oil to cover numbers 30 and 40; heavy oil to cover number 50; extra heavy oil to cover 60, 80, 95 and 115. It was voted to accept this majority report as the sense of the meeting. A minority report, which follows the present classification adopted by the Navy Department, was also submitted.

The conference recommended the measurements of viscosities of oils up to 500 series at 100° F.; 600 series and higher at 210° F.



# NATIONAL LEGISLATION

**C**ONGRESS reconvened in extra session November 20 on call of the President after its recess which began September 22. The purpose of the President in calling Congress together was to secure action on the pending ship subsidy bill and other uncompleted legislation, and also to enact appropriation laws for the government departments for the year beginning July 1 next with the idea of cleaning up all stray ends of legislation so that there will be no need of Congress meeting again until December, 1923, as the present Congress will expire by constitutional limitation March 4, 1923. This program may, however, be altered should the new Representatives and Senators who were elected on November 7 for the new Congress force an extra session next spring in order to secure action on bills which they believe should be enacted. A situation might be created by these new groups influencing members of the present Congress to delay legislation at the extra session which began November 20 and the regular session beginning December 4 which would throw these matters over into an extra session after next March.

## NEW LEADERS IN BOTH HOUSES

As a result of the primary choices and election results, many Congressmen of long service and holding leading positions will go out of office, March 4, necessitating practically an entire realignment of leaders on both sides in both Houses. Senator Underwood, Dem., Ala., has announced that he cannot longer retain leadership of the Democratic forces on account of his health and with the defeat of a large number of Republican and Democratic Senators for reelection, there will be many changes in Senate committees. A new chairman will be appointed for the Senate Committee on Mines and Mining to succeed Senator Miles Poindexter, Rep., Wash., who was defeated. It is probable that Senator Tasker L. Oddie, Rep., Nev., will be chosen for this chairmanship. In the House, a new floor leader will be chosen to succeed Representative Frank W. Mondell, Rep., Wyo., who goes out of the House, as he was not a candidate for the House and was de-

feated for the Senate. There will also be a new chairman of the Committee on Rules, taking the place of Representative Philip Campbell, Rep., Kans., who failed to secure renomination. There will also be many new chairmen for House committees, including that on Ways and Means, whose chairman, Representative J. W. Fordney, Rep., Mich., was not a candidate for reelection; the Committee on Mines and Mining, whose chairman, Representative M. E. Rhodes, Rep., Mo., was defeated for reelection, and the chairmen of the Judiciary and Post Office Committees, whose chairmen, Representatives Volstead and Steenerson, Reps., Minn., were defeated. It is also expected that there will be a new Democratic floor leader to succeed Representative Claude Kitchin, Dem., N. C., who will give up this position because of ill health. While none of these changes will occur until after March 4, when the defeated Congressmen retire, the coming months are expected to witness conferences and negotiations for the selection of leaders to these important positions.

## GOVERNMENT FUNDS

The House began work early on the appropriation bills for the government for the next year, its Appropriations Committee meeting November 10 to draft measures. There are a number of bills of general interest on the House calendar which are subject to consideration at any time. These include the following:

The disposition of the Muscle Shoals nitrate power project on which conflicting reports have been made by the House Military Committee.

The bill of Representative Rhodes, Rep., Mo., chairman of the House Committee on Mines and Mining, for acquisition of land for the government fuel yard of the Bureau of Mines, which supplies coal for the government departments in Washington. The government fuel yards are now leased and opposition has been made by retail coal interests to continuance of the yard on the ground that it interferes with local coal interests. The bill has been urged by the Bureau of Mines on the ground that it has assured government departments in Washington

of a continued supply of coal at less cost than by purchases from retail dealers.

Granting 20 percent royalties and bonuses, received from lands in naval petroleum reserves to the states in which the reserves are located.

## AGRICULTURAL LEGISLATION

Reports of the Congressional Commission on Agriculture covering transportation and credits for agriculture. To carry out the award of the War Labor Board of 1918 in favor of employees of the Bethlehem Steel Company, whose wages were increased by government order. Bill passed by the Senate authorizing acquisition of a fuel station at Hazzell Island, St. Thomas, Virgin Islands. Constitutional amendment to forbid issuance of federal and state securities exempt from taxation.

Before House committees there is pending a proposed revision of the mining laws, which is in the House Committee on Mines and Mining. The House Judiciary Committee has several resolutions proposing amendment to the Constitution to forbid child labor. It will also take up the demand for impeachment of Attorney General Daugherty for obtaining a court injunction against striking railroad employees.

## DYE AND OIL INQUIRIES

The Muscle Shoals nitrate project is also on the Senate calendar on report from committee, as is also a bill already passed by the House to prevent lynching. There are a few other bills of general character awaiting Senate action, the most important being the measure to prohibit the sending through the mails of threatening letters.

The Subcommittee of the Senate Judiciary Committee, of which Senator Shortridge, Rep., Calif., is chairman, which investigated the alleged dye monopoly, is expected to report shortly.

Further investigation will be made by the Senate Manufactures Committee as to the prices of crude oil and gasoline.

The reconvening of Congress in extra session November 20 was marked by the introduction of a number of bills affecting the mining industry. Among them

### IMPORTANT BILLS REVIEWED IN THIS ISSUE

#### MINING—

S. 4040: By Mr. Oddie, Nevada. (Gold bounty)

#### COAL—

H. R. 12826: By Mr. Rogers, Mass. (Coal embargo)

H. R. 12827: By Mr. Rogers, Mass. (Anthracite embargo)

#### OIL—

S. Res. 268: By Mr. Walsh, Mont. (Investigation of leases)

#### SHIPPING—

H. R. 12817: By Mr. Greene, Mass. (Ship subsidy)

H. R. 12830: By Mr. Madden, Ill. (Claims)

#### SOLDIER BONUS—

H. R. 12815: By Mr. Hill, Md.

H. R. 12816: By Mr. Britten, Ill.

H. R. 12896: By Mr. Johnson, S. D.

#### TAXATION—

H. R. 12825: By Mr. Jones, Texas. (Tax determination)

was a measure introduced by Senator Oddie, Rep., Nev., providing for a bounty of 25 cents per pennyweight on gold produced in the United States to be paid to producers for a period of three years. The bill was referred to the Senate Committee on Mines and Mining. It differs from the McFadden gold excise and premium bill introduced nearly two years ago, the McFadden bill providing for a 50-cent bounty and a tax of like amount on the consumption of gold other than for coinage or monetary purposes.

#### COAL EMBARGO

Bills were introduced proposing an embargo on coal within the discretion of the President and an immediate embargo on anthracite coal.

An investigation of alleged monopolistic control of oil fields under the leasing law was proposed by Senator Walsh, Dem., Mont.

The House took up the ship subsidy bill, whose passage was urged in a special message by the President, with the expectation of voting on it November 29.

The soldier bonus bill reappeared, proposals being made to meet its cost by a tax on light wines and beers.

#### BLUE SKY HEARINGS

The Senate Committee on Interstate Commerce will conduct hearings December 6 and 7 on the Denison Blue Sky bill which was passed by the House last session.

#### MINING (Gold Bounty)

S. 4040. Introduced by Mr. Oddie (Rep., Nev.); referred to the committee on Mines and Mining. This bill proposes to conserve the natural gold resources of the United States by the payment for three years to producers of a bounty of 25 cents per pennyweight on newly mined gold. The bill is in some respects similar to the McFadden gold bill except that it does not propose a tax on gold used in the arts. The bill is as follows:

"That, out of any moneys in the Treasury not otherwise appropriated, the Treasurer of the United States is hereby authorized and directed to pay, for a period of three years after the passage of this act, to producers of newly mined gold within the continental United States and its non-contiguous territory a bounty of 25 cents per pennyweight of fine gold produced, in accordance with the provisions hereinafter set forth.

"That on and after the passage of this act every producer of newly mined gold within the continental United States and its non-contiguous territory who shall be entitled to the benefits of this act shall deliver the gold so produced to the United States Mint or its authorized agencies, accompanied by a sworn statement setting forth the place where the gold was mined, the dates between which it was mined and prepared for market, and that no gold obtained from any other sources is contained therein. In the event that any gold is recovered from ore by custom smelting or milling the proprietor or his managing agent, or an executive or managing officer of any such smelting or milling company, shall make and deliver to the producer a sworn statement giving the date or dates on which such ore was delivered for smelting or milling, the date said gold so recovered from said ore was delivered to the producer, and the amount of said gold so delivered to him.

"Upon the delivery of any such gold, accompanied by the sworn statement of the producer, or accompanied by the sworn statement of the smelting or milling agency, the Director of the Mint shall execute and deliver to such producer a certificate setting forth the number of fine pennyweights of newly mined or smelted gold then and there delivered by such producer, and shall set forth the amount of bounty to which such producer is entitled.

"In the event that ore containing gold is delivered to a custom smelter or mill

for smelting or milling by the producer of the ore, and if, in the usual smelting or milling practice, said ore can not be treated without delay, the smelting or milling company may follow the usual smelting or milling practice, purchase said ore, and receive the certificate, under oath, of the producer setting forth the time and place of the mining thereof, and pay to the producer thereof the bounty herein provided for each fine pennyweight of gold so recovered by said smelting or milling company, which, upon such payment, shall be entitled to all of the rights of the producer of the ore as of the date of delivery of the ore to such smelting or milling company, and, upon the presentation of the certificate of the producer, together with a certificate of such smelting or milling company setting forth all of the facts as required by the rules and regulations established hereunder, shall receive as a bounty the same amount of money for such gold so produced and delivered to the smelter or mill as the producer would have received if such ore had been smelted or milled and the gold returned to the producer of the ore.

"That every person, partnership, or corporation so producing newly mined gold within the continental United States and noncontiguous territory on and after the passage of this act who shall deliver the same to the United States Mint or its authorized agencies, as herein provided shall be paid therefor the sum, amount or consideration now provided by existing law, and, in addition thereto, shall be entitled to receive a bounty, as herein provided, on the certificate of the Director of the Mint.

"That upon the delivery of such gold and sworn statements, as hereinbefore set forth, to the United States Mint, or its authorized agencies, a certificate shall be issued by authority of the Director of the Mint to the producer, or his order, certifying that the holder thereof is entitled to receive from the Treasurer of



the United States the sum specified therein in payment of the bounty provided by this act.

"That any person, whether acting for himself or as agent or officer of any gold producer, smelter, refiner, or milling company, who purposely or knowingly, by act, way or means, shall himself adulterate, or procure or solicit another to adulterate, any gold presented to the United States mint for which a certificate for the payment of a bounty, as provided herein, is requested, or who shall purposely or knowingly make a false statement, or procure or solicit another to make a false statement, in any statement or certificate required herein which would entitle the producer to receive a bounty on the production of the newly mined gold herein provided for shall be guilty of a crime against the United States, and shall, upon conviction, be imprisoned not more than five years or fined not more than \$10,000 or both."

#### COAL

##### (Embargo)

H. R. 12826. Introduced by Mr. Rogers (Rep., Mass.); referred to the Committee on Interstate Commerce. This bill would authorize the President to declare an embargo on coal exports from the United States when the public interest requires it, provides as follows:

"That whenever the President shall find that the public interest so requires, he is hereby authorized to declare an embargo on the exportation of coal from the United States to foreign countries; such embargo may include either anthracite or bituminous coal or both and may be complete or partial: Provided, however, That without further authority of the Congress no such embargo shall continue in operation for a period of more than six months at any one time."

##### (Anthracite Embargo)

H. R. 12827. Introduced by Mr. Rogers (Rep., Mass.); referred to the Committee on Interstate Commerce. This bill would declare an immediate embargo on anthracite exports on account of the present shortage of coal. The bill is as follows:

"That the conditions at present prevailing in the production and distribution of anthracite coal are hereby declared to constitute a national emergency.

"That during the period of the national emergency it shall be unlawful to export or to ship for export anthracite coal from the United States to any foreign country.

"That the President is hereby authorized when in his judgment the national emergency has passed to make proclamation to that effect, whereupon the provisions of this act shall become inoperative.

"That violation of section 2 of this act shall be punishable by a fine of not exceeding \$10,000 or by imprisonment for not more than one year, or by both such fine and imprisonment."

#### OIL

##### (Lease Investigations)

S. Res. 368. Introduced by Mr. Walsh (Dem., Mont.); referred to the Committee on Public Lands. This resolution is based on charges that persons or corporations are holding more than three oil or gas leases in any state or more than one within the geologic structure of producing fields contrary to provisions of the leasing law. The resolution directs the Senate Committee on Public Lands to investigate and report as follows:

"Into all leases issued under the said act, to whom the same were issued, to whom the same or any rights thereunder were assigned or otherwise transferred, and the members of any association or the stockholders of any corporation acquiring such leases or any rights thereunder, at the time and since the same were acquired, with the business relation, if any, between any such associations or corporations, and how far, if at all, any two or more are controlled by one and the same management by a common-stock ownership or otherwise.

"The area embraced in such leases and the state and geologic structure within which the lands embraced therein lie.

"Any contracts entered into by the holders of any such leases or any interest therein for the disposition of any oil or gas issuing from the lands embraced therein and the various parties through which the same or the products thereof pass before reaching the consumer, with the relation of any such parties to each other.

"To report to the Senate the facts developed by such inquiry, and

"To recommend such action by Congress or the executive departments, or both, as shall to the committee seem appropriate to accomplish the purpose of the statute above referred to and to prevent evasion of its provisions."

#### SHIPPING

H. R. 12817. Introduced and reported by Mr. Greene (Rep., Mass.) from the Committee on Merchant Marine. This

bill is a revised draft of the former shipping bill and proposes government aid in the operation of merchant ships.

#### CLAIMS

H. R. 12830. Introduced by Mr. Madden (Rep., Ill.); referred to the Committee on Merchant Marine. This bill provides that the Shipping Board shall not pay any claim other than for current operations unless a written claim is filed with the Shipping Board within ten days after passage of this law. Written claims already filed need not be refilled. No claim already filed may be amended so as to increase or include additional items after ten days allowed, nor may any claim filed within ten days be thereafter so amended.

#### SOLDIER BONUS

H. R. 12815. Introduced by Mr. Hill (Rep., Md.); referred to the Committee on Ways and Means. The bill proposes a bonus to veterans of the world war to be paid in cash in three years, the funds therefor to be raised by taxes on light wines and beers.

H. R. 12816. Introduced by Mr. Britten (Rep., Ill.); referred to same committee. This bill is similar to the foregoing except that in addition it provides for land settlement by veterans.

H. R. 12896. Introduced by Mr. Johnson (Rep., S. Dak.); referred to same committee. This bill is similar to the one passed by Congress last session but vetoed by the President.

#### TAXATION

##### (Assessment Period)

H. R. 12825. Introduced by Mr. Jones (Dem., Tex.); referred to the Committee on Ways and Means. This bill amends section 1322 of the revenue law regarding determination of tax assessments to read as follows:

"That hereafter all internal revenue taxes, unless both the commissioner and the taxpayer consent in writing to a later determination, assessment, and collection of the tax, shall, notwithstanding the provisions of section 3182 of the Revised Statutes or any other provision of law, be assessed within one year after such taxes become due, but in the case of fraud with intent to evade tax or willful attempt in any manner to defeat or evade tax such tax may be assessed at any time."

## COAL DUST EXPLOSION STUDIES BULLETINED

*Bureau of Mines Issues Report Covering Investigations Extending Through Six-year Period—Many Important Conclusions Drawn—Vast Aid In Safety Movement*

**T**HE BUREAU of Mines has issued a bulletin in which results of extensive studies of coal-dust explosions are presented. Investigations made by that agency in connection with this subject during 1913 to 1918, inclusive, are analyzed in detail, and methods of preventing explosions and limiting incipient factors are presented.

The experimental mine, in which the tests described in this bulletin were made, is near Bruceton, Pa. The site was selected after careful search for the most favorable natural conditions for explosion testing.

### FIRST TESTS COSTLY

The first fifteen experimental explosions were conducted during the fall of 1911 and the winter of 1912. The destruction resulting from two of these explosions was so great that the cost of the extensive repairs necessary in rehabilitating the mine prevented further tests for several months. These early tests, however, made a decided impression on the public. In fact, the turning point in the attitude of the coal-mining men began with these violent explosions, which demonstrated to the mining audience that dry coal dust was an exceedingly dangerous thing in a mine, even without the presence of inflammable gas in the air.

After the demonstrations in the experimental mine of the explosibility of bituminous dust, beginning in 1911, the extent of bituminous mine explosions declined. In the ten years 1911 to 1920, 75 explosions occurred in mines in which five or more men were killed, with a total number of 2,057 deaths, a reduction of 1,239 in number killed as compared with the preceding 10 years, although the average number of miners and the average production had increased nearly one-half.

### THE ENCOURAGING FEATURE

The most encouraging feature is that in the three years, 1918, 1919 and 1920, the deaths from explosions in which five or more men have been killed have been only 41, 81 and 47, respectively. In explosions killing less than five men, it is considered there was no extended propagation of a local explosion of gas or local coal-dust ignition by a blown-out shot, indicating the more general use of methods of immunizing coal dust by wetting, humidifying, or by dilution by rock or shale dusting. In addition to the reduction in loss of life, an appreciable saving in dollars and cents was undoubtedly effected.

Owing to the expense involved in the publication of Bulletin 167, which contains 639 pages, 31 plates and 82 figures, the entire distribution has been entrusted to the Superintendent of Documents, Washington, D. C., who sells the report at a price of \$1.00.

### MINING TAX CASES ARE ASSURED FAIRNESS

**A** REORGANIZATION of the Committee on Appeals and Reviews of the Treasury Department now has been effected to give the mining industry a representation assuring it of



W. R. King

the most capable handling of intricate issues presented by cases in which it is involved.

The committee's personnel has been enlarged from nine to twelve, two of the additional members being appointed solely because of the technical knowledge they can apply to mining cases. A. W. Gaumer, mining engineer, was appointed earlier in the year and W. R. King, mining auditor, was appointed November 9.

Mr. King is a native of eastern Tennessee. Having acquired the basis for his future accounting experience through several years in various positions, Mr. King practiced the profession of public accountant, serving clients in New York, Baltimore, Pittsburgh and New Orleans. During this period much of his work was in connection with industries of coal min-

ing, iron ore mining, marble quarrying and timber.

In 1919 he was employed in the Income Tax Unit of the Internal Revenue Bureau, after having served with the Bureau of Aircraft Production in connection with the settlement of contracts. For almost three years until his appointment to the Committee on Appeals and Review, Mr. King was chief of the Audit Section of the Natural Resources Division of the Income Tax Unit.

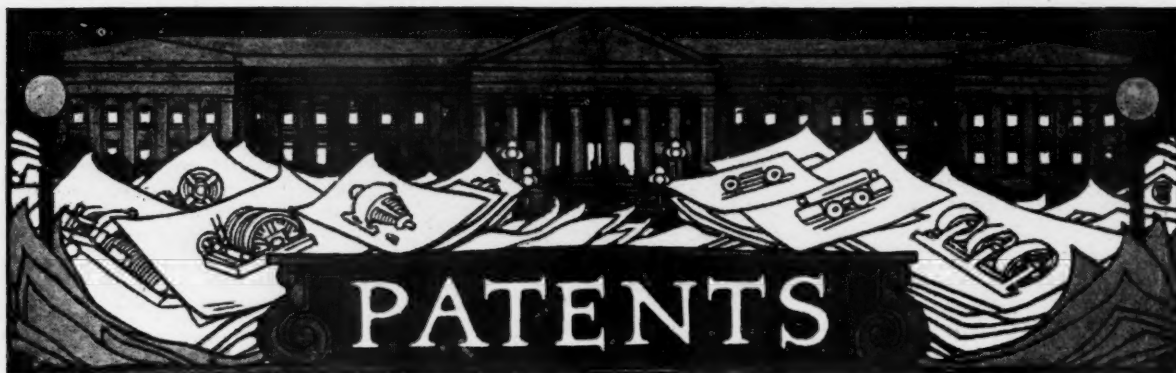
The function of the committee is to review, upon appeal, the administrative decisions of the Income Tax Unit in important income and excess profits cases, particularly cases involving exceptional or unusual conditions with respect to questions of invested capital, amortization, depletion, depreciation, etc.

### LEAD SMELTING SHOWS LARGE DECREASE

**R** EPORTS MADE to the Census Bureau show a decrease in the activities of the establishments engaged primarily in the smelting and refining of lead during 1921, as compared with the year 1919. The total value of products reported amounted to \$150,593,800 in 1921, and to \$193,794,500 in 1919, a decrease of 23.5 percent.

The decrease in production has been accompanied by decreases in the number of persons employed, in the total amount paid during the year in salaries and wages, and in the cost of materials. Considerable fluctuation is noted in the monthly employment of wage earners during 1921. In January, the month of maximum employment, 5,710 wage earners were reported, and in July, the month of minimum employment, 3,838—the minimum representing 67.2 percent of the maximum. The average number employed during the year was 4,509 in 1921, as compared with 6,438 in 1919. A classification of the wage earners with reference to the prevailing hours of labor in establishments in which employed shows that for 3,815, or 84.6 percent of the total (average) number, the hours per week were between 54 and 60; for 663, or 14.7 percent, they were 48 per week; and for 31, or seven-tenths of one percent, they were 60 and over.

**COAL EXPERT ASSIGNED**—Carl A. Allen, of Salt Lake City, engineer of the U. S. Bureau of Mines, has arrived at Washington on assignment by the bureau to collect information for the Coal Fact-finding Commission. Mr. Allen is a graduate of the Colorado School of Mines, where he established the course in coal mining several years ago. He has been chief of the mine inspection department of the state of Utah for four years past.



CONDUCTED BY JOHN BOYLE, JR.

1,428,069—James F. Yeckel, Lawrence, Pa., September 5, 1922.

**TRACKBRAKE FOR MINE CARS** comprising a chock with means for automatically moving it into inoperative position by the car, the chock being provided with springs so as to absorb the shocks caused by the car wheels striking said chock.

1,428,392—W. P. Ogden, Denver, Colo., September 5, 1922.

**CONCENTRATOR** for working placers containing coarse and fine gold, black sand, platinum and rubies, comprising a main flume, grizzlies at spaced intervals in the flume and spaced above the floor thereof, a conveyor flume, drawoffs leading from the bottom of the main flume beneath the grizzlies respectively, and connected with the conveyor flume, a distributor flume carrying baffles connected to said conveyor flume, drawoffs leading from said distributor flume and concentrating tables connected with said last mentioned drawoffs carrying riffles for retaining black sand and having an overflow of waste materials.

1,428,505—M. P. Holmes, Claremont, N. H. Assigned to Sullivan Machinery Co., September 5, 1922.

**MINING MACHINE** of the long wall type, provided with a cutter chain which projects in a substantially horizontal plane from one end of the casing to which it is pivoted and wherein an electric or other motor contained in said casing propels the machine by means of a cable which is anchored at one end. Heretofore the machine could be propelled only in one direction, i. e., forward, or in the direction of the end thereof opposite the cutter bar, along the mine face by means of the fixed mechanism above referred to, and a primary object of this invention is to provide means whereby the machine can also be propelled in the opposite direction, i. e., in the direction of the cutter bar thereof, as is frequently desirable.

1,428,634—M. P. Holmes, Claremont, N. H. Assigned to Jeffrey Mfg. Co., September 12, 1922.

**MINING MACHINE** provided with means to cool the cutting mechanism so as to avoid igniting the gas in the mine arising from the high temperature of the cutter bits: the cooling agent is supplied longitudinally of the bar and so distributed to the cutter chain and bits as to maintain the same relatively cool. Mechanism is provided whereby the delivery of masses of dust in the air, from the kerfs to the rooms or entries of the mine will be prevented.

1,428,935—Carl Scholz, Charleston, W. Va., September 12, 1922.

**MINE CAR** having a composite body construction, that is, one in which a portion is made of structural iron, while the remainder is made of wooden planking. The chief objection to all steel cars are their rigidity and liability to take a permanent set, if once bent out of shape. On the other hand, a wooden car is much more flexible, and will give to compensate for unevenness on the track, but deteriorates much more rapidly than a steel car. In a car of the composite construction many of the desirable points of both wood and steel can be embodied. Another object of the invention is the construction of an underframe comprising channel irons so arranged that the floor of the car is continuous and extends beyond the ends of the car body to serve as bumpers. A further object of the invention is to provide a car having an increased capacity and at the same time keeping its height and center of gravity low.

1,429,145—J. F. Joy, New Bethlehem, Pa., September 12, 1922. Assigned to Joy Machine Co.

**LOCOMOTIVE TRANSPORTATION OF COAL CARS IN MINES** with particular reference to the delivering of empty cars to be loaded from entry switches of a mine to a point near the working face of mine rooms and the returning of the loaded cars to the switches where they may be collected by gathering locomotives and then towed out of the mine in trains by main haulage locomotives.

1,429,480—Charles Allen, El Paso, Tex., September 19, 1922.

**ORE CLASSIFIER** which includes a sorting column, down through which the solid particles fall down against an up-flow current to effect classification, the solid particles falling through the column being separated from the pulp as it comes from the mill. The present invention finds its embodiment in the form of a by-pass for automatically regulating or adjusting the up current flow to the falling metalliferous particles in the column, whereby to maintain a substantially uniform velocity of flow of the up current regardless of the volume of occupancy of the column by solid particles, within reasonable limits.

1,429,845—G. T. Cooley, Joplin, Mo., September 19, 1922.

**CONCENTRATOR** comprising a double deck machine, the upper deck or table being a rougher and the lower one a finisher, the rougher having hand riffles disposed in fan-like form and of gradually increasing height down the surface of the table. Means are provided for imparting a horizontal gyratory rotary

motion to the feed end of one table and a smart bump to the feed end of the other table.

1,430,140—F. S. Adams, Anaconda, Mont., September 26, 1922.

**PRECIPITATING COPPER** from hot solutions by sulfur dioxide, the step which consists in repeatedly passing sulfur dioxide gas through the solution.

1,430,183—J. H. D. Peterson, Chicago, Ill. Assigned to Link Belt Co., September 26, 1922.

**HANDLING COAL** and storing mixed materials of various grades which consists in conveying the mixed materials to a distribution point, grading the material at that point, conveying one grade of material to the point of use, conveying simultaneously another grade of material toward a storage place, discharging it by gravity at an intermediate point, moving it thence to the storage place, returning from the storage place to the intermediate point, conveying it thence to the distribution point and thence with other material of similar grade to the point of use.

1,429,216—F. Courtois, Brussels, Belgium, September 26, 1922.

**COAL WASHER** so arranged as to solve the following double problem, namely: 1. To separate the clean shale, that is to say, the stones mixed with the coal, from the clean coal, by means of the suction produced by the piston, this being done automatically (that is to say without the intervention of any hand control) according to the nature of the coal to be dealt with (i. e. according as it contains a greater or lesser proportion of shale) and according to the quantity of coal to be washed which is fed on to the sieve in the trough. 2. To remix with the clean coal a certain quantity of mixed coal, the less stony portion, so as to obtain a commercial coal from which the most stoney coal is eliminated by suction, such elimination being also regulated automatically, according to the presence, in a greater or lesser percentage, of such shale in the raw mixture and according to the charge of raw mixture.

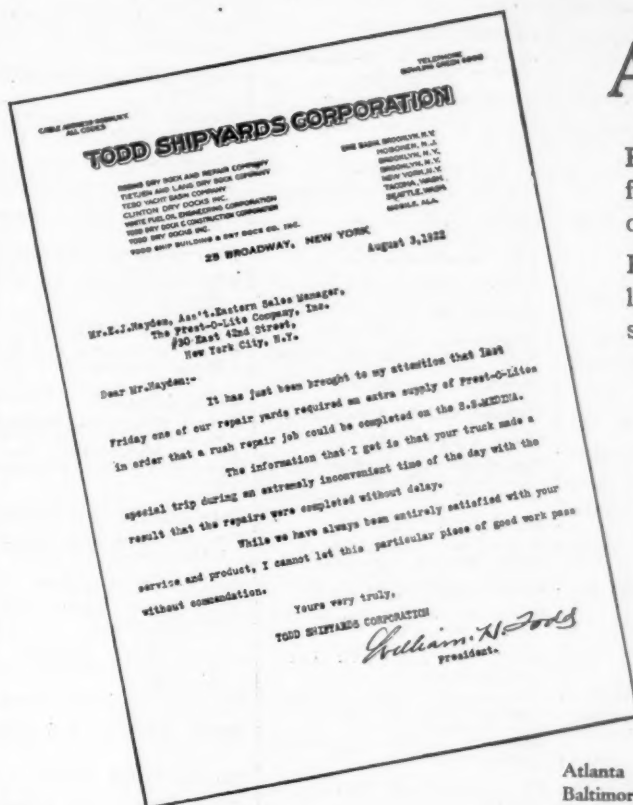
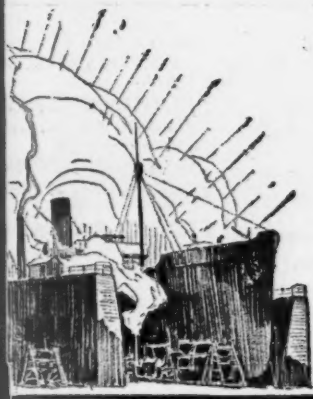
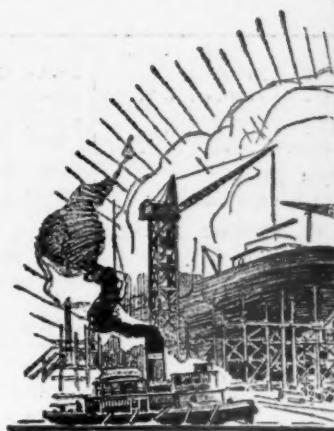
1,420,590—M. P. Holmes, Claremont, N. H. Assigned to Jeffrey Mfg. Co., September 26, 1922.

**CLUTCH CONTROLLING MECHANISM** for use in the control of the main or other clutch of a mining machine.

1,430,521-2—M. P. Holmes, Claremont, N. H. Assigned to Jeffrey Mfg. Co., September 26, 1922.

**MINING MACHINE** provided with cutting means, flexible guiding members connected each to a fixed support.





## A RUSH JOB

Prest-O-Lite's unrivalled service fully cares for the steady demand or the emergency need.

Fifty-four plants and warehouses, linked together, provide the necessary flexibility.

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DISSOLVED ACETYLENE

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General Offices: Carbide and Carbon Building, 30 East 42nd Street, New York  
Balfour Building, San Francisco; In Canada: Prest-O-Lite Company of Canada, Limited, Toronto

# BUYER'S DIRECTORY

## ACID, SULPHURIC

Irrington Smelting & Refining Works, Irvington, N. J.

## AERIAL TRAMWAYS

American Steel & Wire Co., Chicago and New York.

## AERIAL TRAMWAY CABLE

Williamsport Wire Rope Co., 1301 Peoples Gas Bldg., Chicago, Ill.

## AIR COMPRESSORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
General Electric Co., Schenectady, N. Y.

## ALTITUDE VALVE

Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

## AMALGAMATORS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

## APPLIANCES, ENGINEERING

Lunkenheimer Co., Cincinnati, Ohio.

## ARMATURES

General Electric Co., Schenectady, N. Y.

## ASSAYERS

Pennsylvania Smelting Co., Pittsburgh, Pa.

## AUTOMATIC CAR CAGERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

## AUTOMATIC COAL SKIP

Roberts & Schaefer Co., McCormick Bldg., Chicago, Ill.

## AUTOMATIC (Mine Doors, Truck and Electric Switches)

American Mine Door Co., Canton, Ohio.

## BAROMETERS

Taylor Instrument Companies, Rochester, N. Y.

## BATTERY-CHARGING EQUIPMENT

General Electric Co., Schenectady, N. Y.

## BELTING (Conveyor, Elevator, Transmission)

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

## BELTING, SILENT CHAIN

Morse Chain Co., Ithaca, N. Y.

## BINS (Coke and Coal)

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

## BIT SHARPENERS

Denver Rock Drill Mfg. Co., Denver, Colo.  
Ingersoll-Rand Co., 11 Broadway, New York City.

## BLASTING POWDER

Hercules Powder Co., 934 King St., Wilmington, Del.

## BLASTING SUPPLIES

Atlas Powder Company, Wilmington, Del.  
du Pont Powder Co., The E. I., Wilmington, Del.  
Hercules Powder Co., 934 King St., Wilmington, Del.

## BLOWERS

General Electric Co., Schenectady, N. Y.

## BLOWERS' CENTRIFUGAL

Ingersoll-Rand Co., 11 Broadway, New York City.

## BOILER MOUNTINGS

Lunkenheimer Co., Cincinnati, Ohio.

## BOILER STOP AND CHECK VALVE

Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

## BOILERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis. (feed pump).

## BOXES, JOURNAL

J. R. Fleming & Son Co., Inc., Scranton, Penna.

## BREAKERS (Construction and Machinery)

Jeffrey Mfg. Co., Columbus, Ohio.  
Vulcan Iron Works, Wilkes-Barre, Pa.  
Wilmot Engineering Co., Hazleton, Pa.

## BRIQUETTING MACHINERY

Jeffrey Mfg. Co., Columbus, Ohio.  
Traylor Eng. & Mfg. Co., Allentown, Penna.

## BUCKETS (Elevator)

Jeffrey Mfg. Co., Columbus, Ohio.

## CABLES (Connectors and Guides)

American Mine Door Co., Canton, Ohio.

## CABLEWAYS

Jeffrey Mfg. Co., Columbus, Ohio.  
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

## CAGE (Safety Appliances)

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

## CAGES

Car-Dumper & Equipment Co., Chicago, Ill.  
Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.  
Holmes & Bros., Robert, Inc., Danville, Ill.  
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

## CAR CONTROL AND CAGE EQUIPMENT

Car-Dumper & Equipment Co., Chicago, Ill.

## CAR DUMPS

Car-Dumper & Equipment Co., Chicago, Ill.

## CAR AND CAR WHEELS

Hockensmith Mine Car Co., Penn Station, Pa.

## CAR-HAULS

Car-Dumper & Equipment Co., Chicago, Ill.

## CASTINGS

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.  
The Lunkenheimer Co., Cincinnati, Ohio.

## CHAINS

Jeffrey Mfg. Co., Columbus, Ohio.  
Morse Chain Co., Ithaca, N. Y.

## CHAINS, AUTOMOBILE ENGINE

Morse Chain Co., Ithaca, N. Y.

## CHAINS, DRIVE

Morse Chain Co., Ithaca, N. Y.

## CHAINS, FRONT END

Morse Chain Co., Ithaca, N. Y.

## CHAINS, OILING

Morse Chain Co., Ithaca, N. Y.

## CHAINS, POWER TRANSMISSION

Morse Chain Co., Ithaca, N. Y.

## CHAINS, SILENT (Rocker-Joint)

Morse Chain Co., Ithaca, N. Y.

## CHAINS, SLING

Morse Chain Co., Ithaca, N. Y.

## CHAINS, SPROCKET WHEEL

Morse Chain Co., Ithaca, N. Y.

## CHEMICALS

Roessler & Hasslacher Chemical Co., 709-717 Sixth Avenue, New York.

## CHEMISTS

Hunt, Robt., & Co., Insurance Exchange, Chicago, Ill.

## CIRCUIT BREAKERS

General Electric Co., Schenectady, N. Y.

## CLAMPS (Trolley)

Ohio Brass Co., Mansfield, Ohio.

## CLUTCHES

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

## COAL COMPANIES

Clinchfield Coal Corp., Dante, Va.  
Lehigh Coal & Navigation Co., Philadelphia, Pa.  
Stonewall Coal & Coke Co., Philadelphia, Pa.  
Thorne, Neale & Co., Philadelphia, Pa.  
Wholesale Coal Co., Pittsburgh, Pa.

## COAL CRUSHERS

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.  
Jeffrey Mfg. Co., Columbus, Ohio.

## COAL CUTTERS

Goodman Mfg. Co., Chicago, Ill.  
Jeffrey Mfg. Co., Columbus, Ohio.

## COAL DRYING PLANTS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## COAL HANDLING MACHINERY

Jeffrey Mfg. Co., Columbus, Ohio.  
Lidgerwood Mfg. Co., 96 Liberty St., New York City.  
Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## COAL MINING MACHINERY

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Goodman Mfg. Co., Chicago, Ill.  
Ingersoll-Rand Co., 11 Broadway, New York City.  
Jeffrey Mfg. Co., Columbus, Ohio.  
Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## COAL MINE POWER PLANTS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## COAL MINING PLANTS

Ingersoll-Rand Co., 11 Broadway, New York City.  
Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## COAL WASHING PLANTS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

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The Lunkenheimer Co., Cincinnati, Ohio.

## COILS (Choke)

General Electric Co., Schenectady, N. Y.

## COMPRESSORS, AIR

General Electric Co., Schenectady, N. Y.  
Ingersoll-Rand Co., 11 Broadway, New York City.

## COMPRESSORS, MINE CAR

Ingersoll-Rand Co., 11 Broadway, New York City.

## CONCENTRATORS (Table)

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

## CONCRETE REINFORCEMENT

American Steel & Wire Co., Chicago and New York.

## CONDENSERS

Allis-Chalmers Mfg. Co., Milwaukee, Wis.  
Ingersoll-Rand Co., 11 Broadway, New York City.

## CONSULTING ENGINEERS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## CONTRACTORS

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

## CONTROLLERS

General Electric Co., Schenectady, N. Y.  
Goodman Manufacturing Co., Halsted St. and 48th Place, Chicago, Ill.

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Traylor Eng. & Mfg. Co., Allentown, Penna.

## CONVEYORS, BELT

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

## CONVEYORS, CHAIN FLIGHT

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.  
Wilmot Engineering Co., Hazleton, Pa.

## CONVEYORS, COAL

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.  
Lidgerwood Mfg. Co., 96 Liberty St., New York City.

## CONVEYORS AND ELEVATORS

Jeffrey Mfg. Co., Columbus, Ohio.

## CONVEYORS, PAN OR APRON

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

## Twenty-Five Years of Service

**N**O résumé of the mining industry would be complete if it did not include the achievements of the petroleum industry, particularly those of the Standard Oil Company (Indiana).

The improved methods of mining, dependent almost entirely as they now are on mechanical needs, have been possible only because of constant progress in the petroleum industry.

Twenty-five years ago conditions were much different than they are now. With the appearance of each new labor-saving device, the lubricating experts of the Standard Oil Company (Indiana) compounded the right lubricants for their efficient operation. At that time, it was necessary to study carefully the different phases of operating conditions and to develop new oils and greases to keep pace with the mechanical progress within the mining industry.

Nowadays, however, so rich a heritage has been bequeathed us by the pioneers of our industry, that our work is no longer a matter of hesitant experimentation, but the application of standardized products for standardized users. Such trade-marked lubricants as are listed below, together with many others, are in daily use by some of the largest mines in the country.

**SUPERLA GREASES**  
For mine car wheel lubrication.

**SUPERLA CYLINDER OILS**  
A complete line of steam engine, cylinder and valve lubricants, made in grades suitable for any steam conditions.

**ARIO COMPRESSOR OIL**  
For intermediate and high pressure air compressors of the plate and poppet valve type.

One of our corps of lubricating engineers will be glad to confer with you and make a detailed survey of your lubricating requirements. He will point the way to correct, economical lubrication. You may avail yourself of his services without obligation.

**STANDARD OIL COMPANY**  
(INDIANA)

910 Michigan Ave., Chicago, Ill.

**CALUMET GREASES**  
For use in compression cups and on open bearings.

**SUPERLA TURBINE OIL**  
A non-emulsifying light, high grade oil for steam turbine use.

**SUPERLA C. & G. COMPOUND**  
A dark, adhesive compound especially developed for gears, cables, wire ropes and chains.

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### CANTON AUTOMATIC MINE DOORS

Safeguard Life—Positive in Operation—Open and Close Quickly—Simple in Construction—Built for Service—Prevent Explosions—Conserve Air.



**NO INVESTMENT REQUIRED  
ABSOLUTELY NONE  
ASK US HOW WE DO IT**



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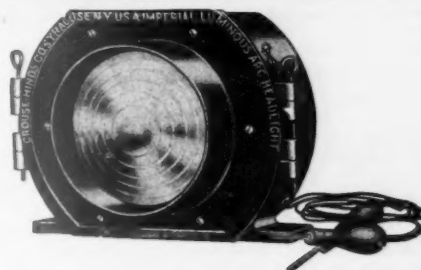
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Door Co.

916 Robin St.  
Canton, Ohio

**SURE TO CLOSE**



Crouse-Hinds Imperial Type MLD  
Luminous Arc Headlight

## CROUSE-HINDS

### Imperial Headlights

meet all conditions of mining service. They are made in various types of Luminous Arcs, Carbon Arcs and Incandescents which take care of all service needs. The Incandescents put all the light of the lamp to work—while the Arc Headlights give a clear dependable beam even though the voltage fluctuates.

**The Ohio Brass Company**  
MANSFIELD, OHIO

Exclusive Sales Agents for Crouse-Hinds  
Imperial Headlights



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**COPPER ELECTROLYTIC**

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**COPPER WIRE**

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Hoffman Bros., Punxsutawney, Pa.

**CRUSHERS**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**CRUSHERS, COAL**

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.  
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**CRUSHERS, JAW AND GYRATORY**

Traylor Eng. & Mfg. Co., Allentown, Penna.

**CRUSHING PLANTS, COKE**

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**CYANIDE**

American Cyanamid Co., New York, N. Y.

Roesler and Hasselacher Chemical Company, 709 Sixth Avenue, New York City.

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Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

**DIAMOND CORE DRILL CONTRACTING**

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

**DOORS, AUTOMATIC MINE**

American Mine Door Co., Canton, Ohio.

**DRAG LINES**

Denver Rock Drill Mfg. Co., Denver, Colo.

Williamsport Wire Rope Co., Gen. Sales Office, 1301 Peoples Gas Bldg., Chicago, Ill.

**DREDGES, GOLD AND TIN**

New York Engineering Co., 2 Rector St., New York City.

**DRIFTERS, DRILL**

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

**DRILLS, AIR AND STEAM**

Ingersoll-Rand Co., 11 Broadway, New York City.

**DRILLS (Blast Hole)**

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

**DRILLS, CORE**

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

Ingersoll-Rand Co., New York City.

**DRILLS, ELECTRIC**

General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., New York City.  
Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**DRILLS, HAMMER**

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

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Ingersoll-Rand Co., New York City.

**DRILLS, PNEUMATIC**

Denver Rock Drill Mfg. Co., Denver, Colo.

Ingersoll-Rand Co., New York City.

**DRILLS, PROSPECTING**

H. R. Ameling Prospecting Co., Rolla, Mo.

Hoffman Bros., Punxsutawney, Pa.

Ingersoll-Rand Co., 11 Broadway, New York City.

New York Engineering Co., 2 Rector St., New York City.

**DRILLS, ROCK**

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General Electric Co., Schenectady, N. Y.

Ingersoll-Rand Co., New York City.

**DRILL STEEL SHARPENERS**

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Ingersoll-Rand Co., 11 Broadway, New York City.

**DRIVES, SILENT CHAIN**

Morse Chain Co., Ithaca, N. Y.

**DRUMS (Hoisting, Haulage)**

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**DRYERS, ORE**

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**DUMPERS, ROTARY**

Car-Dumper & Equipment Co., Chicago, Ill.

**DUMP CARS**

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du Pont Powder Co., The E. I., Wilmington, Del.

Hercules Powder Co., 934 King St., Wilmington, Del.

**DYNAMOS**

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Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

**EJECTORS**

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General Electric Co., Schenectady, N. Y.

**ELECTRICALLY OPERATED VALVE**

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**ELECTRIC LOCOMOTIVES**

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Goodman Mfg. Co., Forty-eighth Place and Halsted St., Chicago, Ill.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Ohio Brass Co., Mansfield, Ohio.

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Ohio Brass Co., Mansfield, Ohio.

**ELECTRICAL SUPPLIES**

General Electric Co., Schenectady, N. Y.

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**ELEVATORS, BUCKET**

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**ELEVATOR CABLES**

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**ELEVATOR MACHINERY**

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

**EMERGENCY TRIP VALVE**

Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

**ENGINE STOP VALVE**

Golden-Anderson Valve Specialty Co., Fulton Bldg., Pittsburgh, Pa.

**ENGINE TRIMMINGS**

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**ENGINEERING APPLIANCES**

The Lunkenheimer Co., Cincinnati, Ohio.

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**ENGINES (Hoisting and Hauling)**

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Ingersoll-Rand, 11 Broadway, New York City.

**ENGINES, STEAM**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

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Hunt, Robert & Co., Insurance Exchange, Chicago, Ill.

Jeffrey Mfg. Co., 958 N. Fourth St., Columbus, Ohio.

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

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du Pont Powder Co., Wilmington, Del.

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General Electric Co., Schenectady, N. Y.

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Vulcan Iron Works, Wilkes-Barre, Pa.

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Hercules Powder Co., 934 King St., Wilmington, Del.

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Jeffrey Mfg. Co., Columbus, Ohio.

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General Electric Co., Schenectady, N. Y.

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Ohio Brass Co., Mansfield, Ohio.

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Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Roberts & Schaefer Co., Wrigley Bldg., Chicago, Ill.

Vulcan Iron Works, Wilkes-Barre, Pa.

**HOISTS, PORTABLE**

Ingersoll-Rand Co., 11 Broadway, New York City.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Vulcan Iron Works, Wilkes-Barre, Pa.

**HOISTS, STEAM**

Allis-Chalmers Mfg. Co., Milwaukee, Wis.

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Ingersoll-Rand Co., 11 Broadway, New York City.

Lidgerwood Mfg. Co., 96 Liberty St., New York City.

Vulcan Iron Works, Wilkes-Barre, Pa.

**HOISTS, (Room & Gathering)**

Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

Holmes, Robert & Bros., Inc., Danville, Ill.

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Connellsville Mfg. & Mine Supply Co., Connellsville, Pa.

**HOSE, AIR & STEAM**

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**HYDRAULIC MACHINERY**

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Car-Dumper & Equipment Co., Chicago, Ill.

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There is a desire on the part of flotation operators to know the chemical methods generally applied in testing for the purity of a flotation oil. We have attempted to supply this information in our booklet on Hercules Flotation Oils.

It gives: complete specifications for our standard grades, the method of detecting adulteration, and tests conducted to insure uniformity and adherence to specifications.

Send for booklet No. 200 today.



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The Hockensmith Wheel and Mine Car Company takes pride in announcing that it has accepted an invitation from the Rice Leaders of the World Association to represent the manufacturers of Mine Cars, Wheels, and Trucks in this world-recognized institution.

It is a source of satisfaction to us to know that it is to be our privilege to promote in company with America's foremost business organizations those principles of highest quality in product and highest standards in service to which, we as an individual corporation, attribute our success.

**HOCKENSMITH WHEEL &  
MINE CAR COMPANY**

*Penn, Pennsylvania*

(PITTSBURGH DISTRICT)

**YOU** can build your coal  
tipples without our  
assistance but if you do you  
will lose the benefit of our  
twenty years' experience  
throughout every coal min-  
ing field on this continent.

Have us build your complete  
plant and receive the most  
benefit from our specialized  
knowledge.

#### Specialties

**COMPLETE COAL MINING  
PLANTS  
COAL TIPPLES  
CLEANING OF COAL BY THE  
DRY PROCESS**  
(Air Separation)

*We are equipped to test your coal  
on standard tables.*

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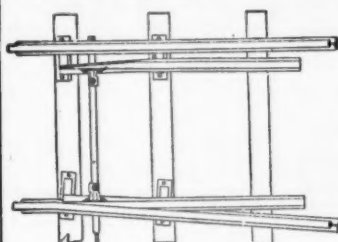
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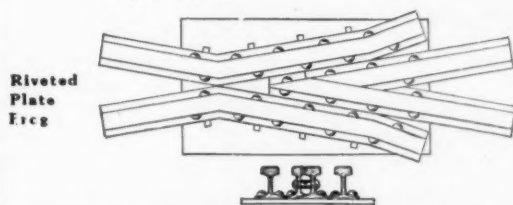
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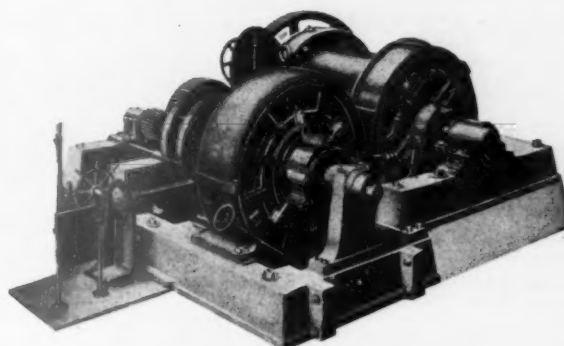
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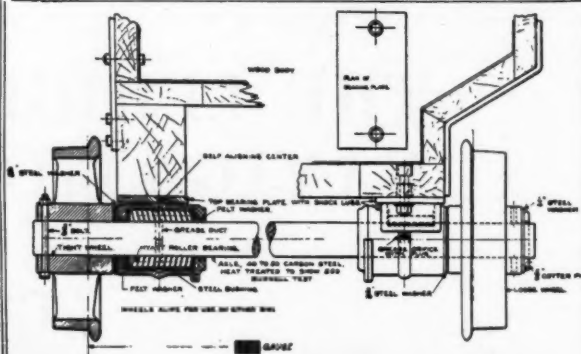
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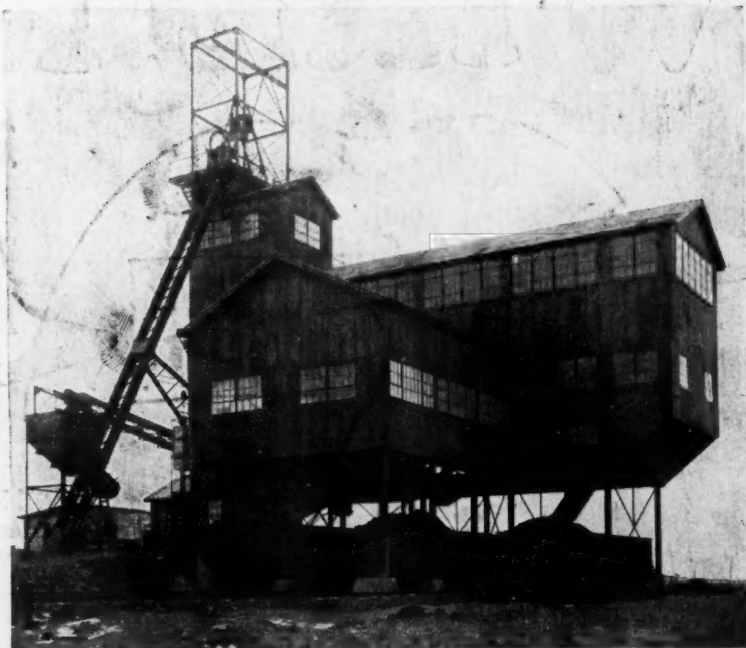
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